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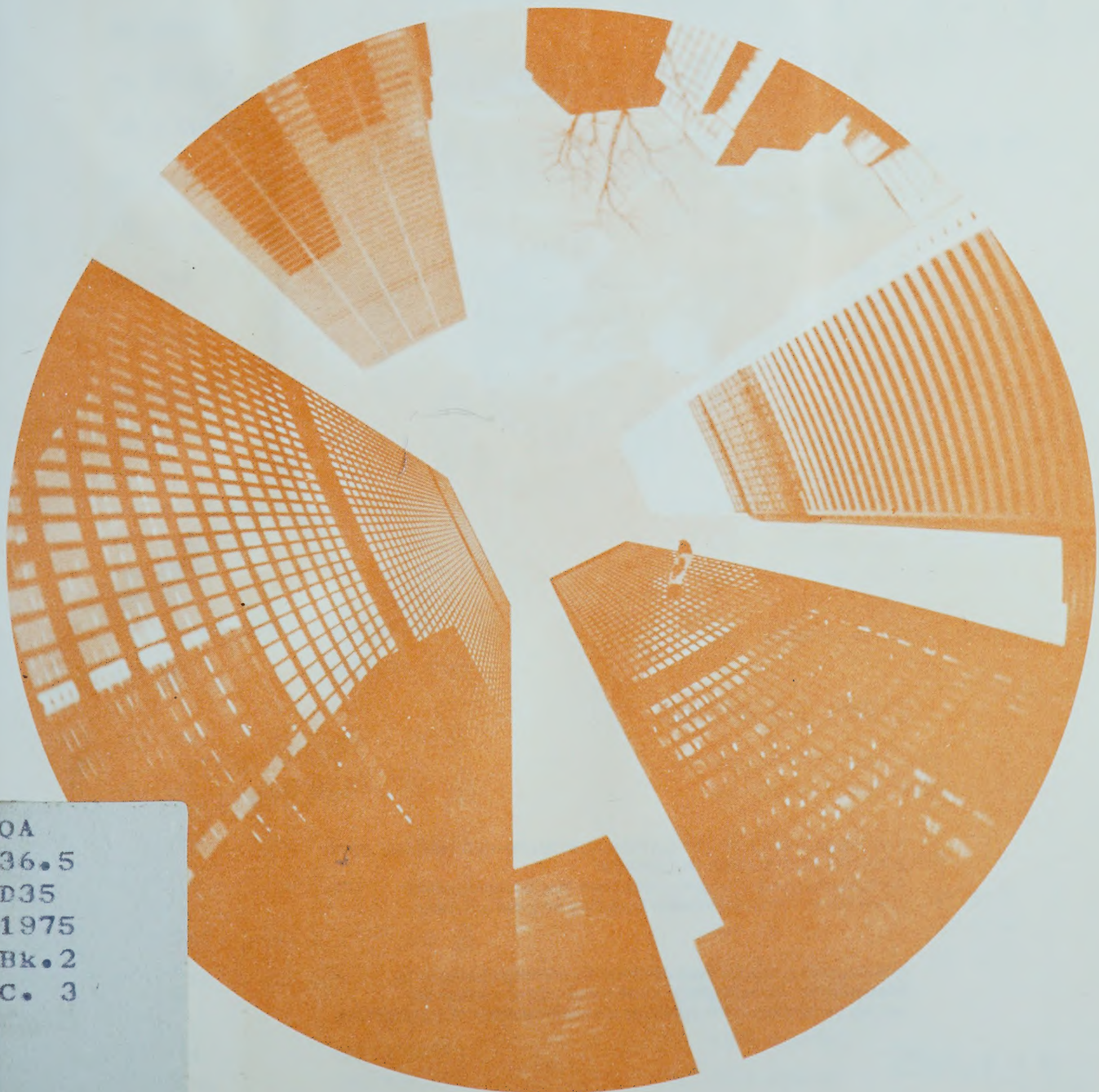
answer key

to Mathematics for a Modern World
Book 2, second edition

Baxter
Newton
Del Grande



QA
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GET-SET EXERCISE, PAGE 2

1. (a) 1728
   (b) 22 460
   (c) 121 195
   (d) 66 431
   (e) 235
   (f) 9768
   (g) $8\frac{1}{3}$
   (h) $21\frac{3}{8}$
   (i) $1\frac{7}{12}$
   (j) $16\frac{7}{10}$
   (k) $23\frac{11}{24}$
   (l) $10\frac{1}{14}$
   (m) $472\frac{19}{40}$
   (n) 190.112
   (o) 1.603
   (p) 283.131
   (q) 23.3
   (r) 772.982

2. (a) 53
   (b) 4653
   (c) 27 823
   (d) 1 332 127
   (e) 257
   (f) 36 287
   (g) 768
   (h) $3\frac{1}{2}$
   (i) $5\frac{5}{28}$
   (j) $\frac{3}{10}$
   (k) $64\frac{9}{20}$
   (l) $3\frac{1}{10}$
   (m) $\frac{11}{30}$
   (n) $76\frac{7}{8}$
   (o) 73.27
   (p) 275.22
   (q) 8.915
   (r) 1731.3
   (s) 788.21
   (t) 0.791
   (u) 0.0064

3. (a) 378
   (b) 12 956
   (c) 82 560
   (d) 43 571
   (e) 4 552 524
   (f) 1344
   (g) 5280
   (h) 2592
   (i) 25 062 228
   (j) $\frac{10}{21}$
   (k) $13\frac{1}{2}$
   (l) $24\frac{3}{4}$
   (m) $\frac{1}{4}$
   (n) 79.8
   (o) 474
   (p) 8.632 02
   (q) 13 429.425
   (r) 94.8
   (s) 14.88
   (t) 241.9365

4. (a) 106
   (b) 589
   (c) 231
   (d) 96
   (e) 0.57
   (f) 5.87
   (g) 12.34
   (h) 0.85
   (i) 5.6
   (j) 0.477
   (k) 8
   (l) $2\frac{10}{17}$
   (m) $\frac{3}{4}$
   (n) $\frac{5}{18}$
   (o) $2\frac{1}{2}$
   (p) $6\frac{2}{3}$
   (q) $\frac{20}{33}$

5. (a) 144
   (b) 4286
   (c) 152.05
   (d) 654.201
   (e) $10\frac{1}{2}$
   (f) $2\frac{1}{4}$
   (g) 225.7216
   (h) 4.73
   (i) 117.3
   (j) 271.35

6. (a) 57%
   (b) 63%
   (c) 4%
   (d) 173%
   (e) 500%
   (f) 75%
   (g) 62.5%
   (h) 125%
   (i) 40%
   (j) $83.\dot{3}\%$

7. (a) 0.25, $\frac{1}{4}$
   (b) $0.\dot{3}$, $\frac{1}{3}$
   (c) 0.375, $\frac{3}{8}$
   (d) 1.125, $1\frac{1}{8}$
   (e) 2.6, $2\frac{3}{5}$

8. 70.4%

9. \$8.09

10. (a) 117 948
    (b) 29 487

EXERCISE 1.1, PAGE 6

3. (a) 5
   (b) 5
   (c) 1
   (d) 3
   (e) 5
   (f) 3
   (g) 4
   (h) 3

4. 4.14, 4.25, 4.27

5. (a) 16.50 and 17.49
   (b) 4.50 and 5.49
   (c) 10.50 and 11.49
   (d) 192.50 and 193.49

6. (a) 7.15 cm and 7.24 cm
   (b) 62.5 cm and 63.4 cm
   (c) 0.115 m and 0.124 m
   (d) 0.0075 km and 0.0084 km

EXERCISE 1.2, PAGE 9

3. (a) 15 700
   (b) 38.5
   (c) 1160
   (d) 9180

4. (a) 300
   (b) 20
   (c) 3
   (d) 1800

5. (a) 1 805 000
   (b) 18 700
   (c) 0.894
   (d) 69.5
   (e) 8.49
   (f) 6.99

6. \$21

7. \$150 approx.

8. \$210 approx.

2861152

EXERCISE 2.1, PAGE 13

6. (a) 10^{15} (c) $(2a)^3$ (e) 3^5
   (b) x^8 (d) y^6 (f) $(3t)^7$
7. (a) $20r^{10}$ (c) $-12p^7$ (e) $-27m^7$
   (b) $-30y^5$ (d) $48x^{10}$ (f) $-28y^{13}$
8. (a) $4s^3$ (c) $\frac{1}{2}x^5$ (e) $\frac{9}{v^6}$
   (b) $-2h^3$ (d) $-\frac{4}{f^2}$ (f) $-6y$
9. (a) $A = 9x^2$ cm^2, $P = 12x$ cm
   (b) 182.25 cm^2, 54 cm
10. (a) $6x^2$ m^2 (b) $8a^3$ cm^2
11. $15x^3$ m^3

EXERCISE 2.2, PAGE 16

5. (a) $4x^2$ (c) $256a^8$ (e) $9x^2y^2$
   (b) $-125a^3$ (d) a^2b^2 (f) $64x^4y^6$
6. (a) $\frac{9}{25}$ (c) $\frac{8x^3}{27}$ (e) $\frac{-27}{1000}$
   (b) $\frac{a^6}{b^3}$ (d) $\frac{a^2}{4b^2}$ (f) $\frac{x^4}{16}$
7. (a) $45a^4$ (d) $144r^4$
   (b) $4c^5$ (e) 16×10^5
   (c) $75y^5$ (f) 21.16×10^6
8. 64
9. $32.2x^2$ m^2

EXERCISE 2.3, PAGE 18

7. (a) 10 (c) 10^{-4} (e) 10^2
   (b) a^2 (d) y^{-1} (f) 1
8. (a) a (d) r^6
   (b) 10^{-2} (e) 4×10^4
   (c) x^{-5} (f) 6×10^{-1}
9. (a) $\frac{1}{2}$ (d) 25 (g) 2
   (b) $\frac{1}{9}$ (e) $\frac{27}{8}$ (h) 4
   (c) $\frac{3}{10}$ (f) 8 (i) $-\frac{1}{72}$

EXERCISE 2.4, PAGE 20

8. (a) 1.83×10^4
   (b) 3.83×10^{-3}
   (c) 1.63×10
   (d) 1.38×10^2
   } 5.

   (a) 1.96×10^3
   (b) 1.94×10^{-2}
   (c) 1.87×10^{-3}
   (d) 2.04×10^{-1}
   } 6.

   (a) 4.21×10
   (b) 3.37×10^{-6}
   (c) 7.78×10^3
   (d) 3.39×10^2
   } 7.

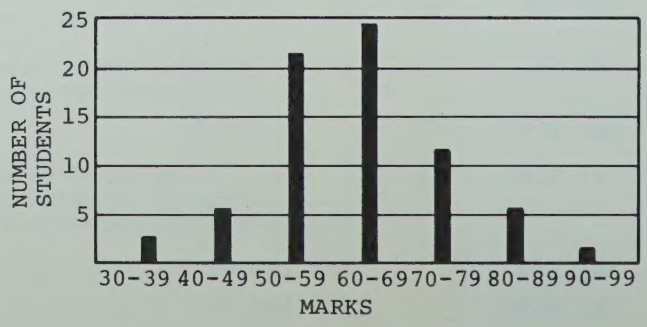
EXERCISE 2.5, PAGE 22

4. (a) 5.41×10^3 (b) 2.84×10
5. (a) 2.76×10^{-3} (b) 5.63×10^5
6. (a) 3.37×10^{-3} (b) 3.69
7. (a) 1.37×10^2 (b) 2.64×10^5
8. 0.681%
9. 8.4 min
11. 3
12. 1142 approx.

EXERCISE 3.1, PAGE 28

5.

Marks	Tally	Students
30 - 39	///	3
40 - 49	𝍸 /	6
50 - 59	𝍸 𝍸 𝍸 𝍸 //	22
60 - 69	𝍸 𝍸 𝍸 𝍸 ////	24
70 - 79	𝍸 𝍸 //	12
80 - 89	𝍸 /	6
90 - 99	//	2



EXERCISE 3.2, PAGE 35

6. (a) 0.276 (b) 0.283

7. $2157

8.

	Object A	Object B
(a)	250 g	646 g
(b)	239	653

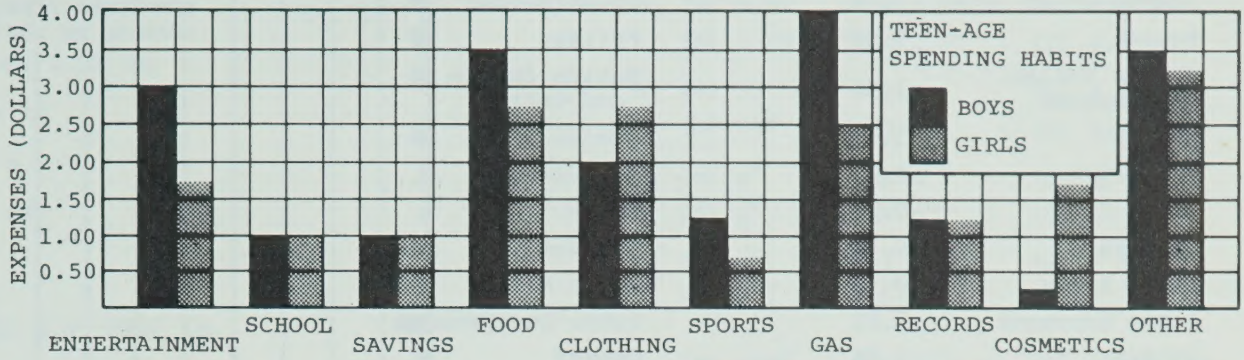
9. (a) $2.15 (b) $2.15 (c) $2.17

10. $5.58

11. (a) $1.36 (b) $1.12

EXERCISE 3.3, PAGE 39

4.



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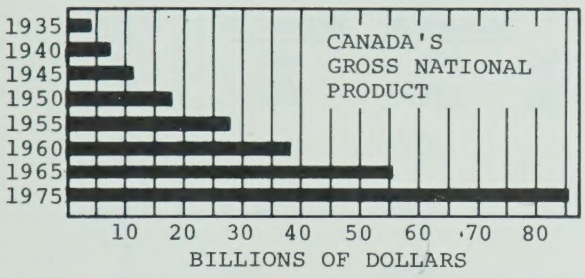

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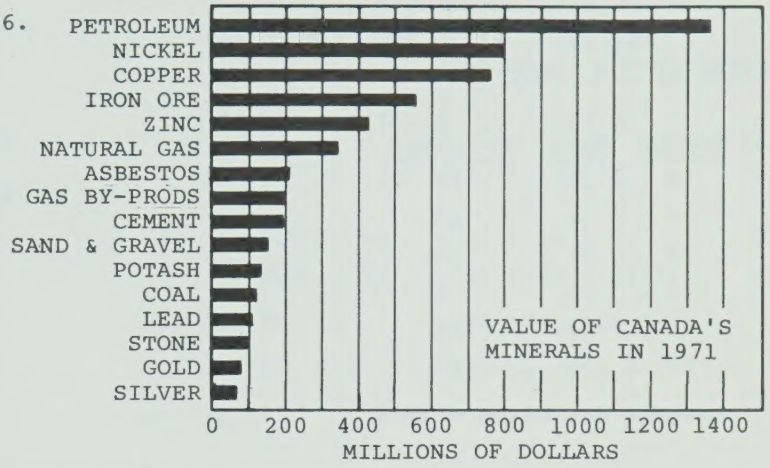

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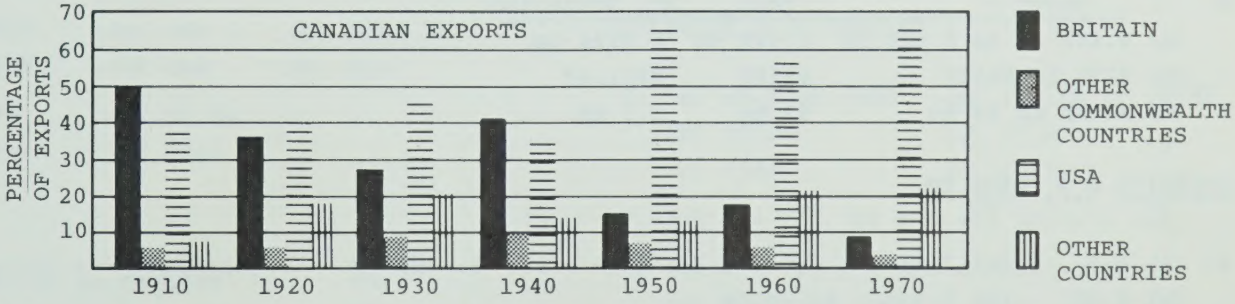
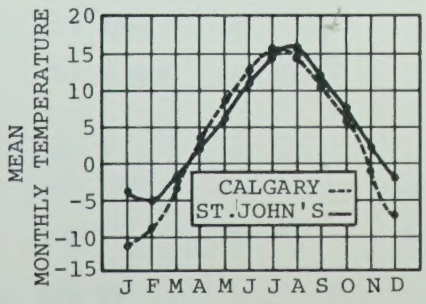
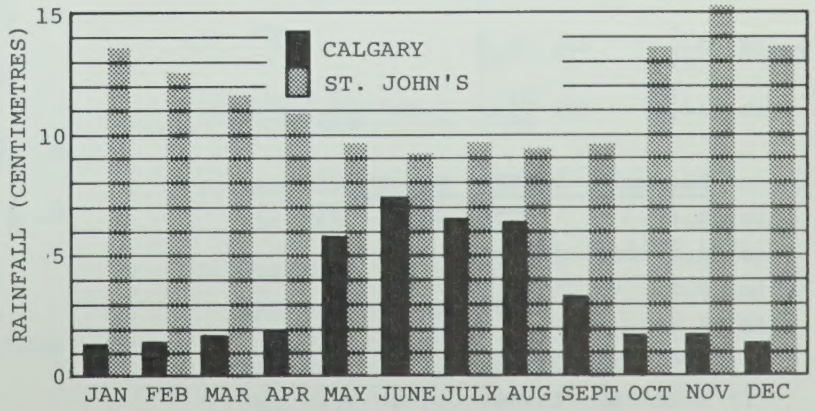


8. (a) Calgary 34.1 mm

St. John's 116 mm

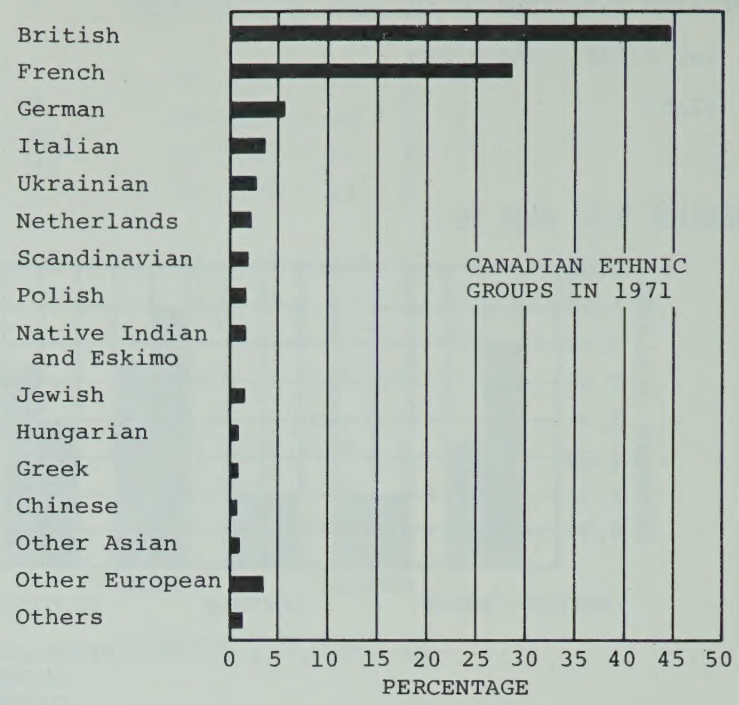
(b)





9.

Nationality	Percentage
British	44.62
French	28.65
German	6.11
Italian	3.38
Ukrainian	2.69
Netherlands	1.97
Scandinavian	1.78
Polish	1.47
Native Indian and Eskimo	1.45
Jewish	1.38
Hungarian	0.61
Greek	0.58
Chinese	0.55
Other Asian	0.77
Other European	3.02
Others	0.96



EXERCISE 3.4, PAGE 44

5.

Number	Mean	Deviation
15	35	20
18	35	17
25	35	10
42	35	7
51	35	16
59	35	24

Average deviation = $15.\dot{6}$

6.

	Range	Mean	Av. Deviation
(a)	0.498 cm to 0.510 cm	0.505 cm	0.0024 cm
(b)	$235 to $4135	$2152	$811.87
(c)	48 kg to 59 kg	53 kg	3.1 kg

7. (a) 50 to 75 (b) 11.5 (c) 16, 66.7%

8.

	Street A	Street B
(a)	508	406
(b)	243	216

EXERCISE 4.2, PAGE 50

4. (a) 0.6 (c) 3.75
(b) 0.35 (d) 5.875 (e) 8.38

5. (a) $3\frac{7}{20}$ (c) $25\frac{8}{25}$
(b) $14\frac{27}{40}$ (d) $\frac{39}{80}$ (e) $\frac{3}{800}$

6.

	Decimal	Period	Length
(a)	$0.\dot{6}$	6	1
(b)	$0.\dot{7}14285\dot{}$	714285	6
(c)	$0.\dot{2}$	2	1
(d)	$0.8\dot{0}$	0	1
(e)	$0.\dot{0}76923\dot{}$	076923	6
(f)	$0.\dot{2}30769\dot{}$	230769	6

7. (a) $\frac{1}{25}$ (d) $\frac{15}{8}$
(b) $\frac{47}{20}$ (e) $\frac{8}{9}$ (g) $-\frac{15}{11}$
(c) $\frac{18}{25}$ (f) $\frac{68}{99}$ (h) $\frac{34}{333}$

8. $\frac{29}{110}$

9. $\frac{1}{2}$

EXERCISE 4.3, PAGE 52

2. (a) $\frac{17}{15}$ (d) $\frac{-41}{8}$ (g) $\frac{1}{3}$
   (b) $-\frac{7}{8}$ (e) $\frac{6}{7}$ (h) $-\frac{23}{6}$
   (c) $\frac{9}{20}$ (f) 9 (i) $\frac{1}{12}$
   (j) 9

3. $1\frac{3}{4}$ cm, 1.75 cm

4. 0.75 mm

5. 1.2 m

6. \$11.58

EXERCISE 4.4, PAGE 54

4. \$8.19

5.

Fraction	Decimal	Percentage
$\frac{1}{4}$	0.25	25%
$\frac{2}{5}$	0.4	40%
$\frac{3}{8}$	0.375	$37\frac{1}{2}$%
$\frac{5}{8}$	0.625	$62\frac{1}{2}$%
$\frac{1}{6}$	$0.1\dot{6}$	$16\frac{2}{3}$%
$\frac{2}{3}$	$0.\dot{6}$	$66\frac{2}{3}$%

6. (a) 50% (c) 75% (e) 100%
   (b) 40% (d) 60% (f) 300%

7. (a) \$8 (c) \$1.36
   (b) \$28 (d) \$206

8. 10%

MBS EXERCISE 1, PAGE 56

1. (a) 1854 (c) $11\frac{39}{40}$
   (b) 27 771 (d) 108.273

2. (a) 3364 (c) -292
   (b) 8.826 (d) $18\frac{23}{24}$

3. (a) 0 (d) 1
   (b) -42 (e) 8 (g) $\frac{11}{18}$
   (c) 15 (f) $\frac{16}{9}$ (h) impossible

4. \$22.59

5. (a) 3 (c) 5 (e) 3
   (b) 3 (d) 4 (f) 1

6. (a) 533.12 (b) 12.06 (c) 208.3

7. (a) 103 (c) 1.92×10^4
   (b) 3.42×10^4 (d) 5480

8. (a) 4.50 (c) 0.0930 (e) 0.887
   (b) 6.20 (d) 1.27 (f) 0.182

9. (a) 11 (c) 2 (e) 3
   (b) 337 (d) 3 (f) 23

10. (a) x^9 (c) a^2 (e) h^{-3}
    (b) y^5 (d) c^{-2} (f) 5^2

11. (a) x^3 (c) a^{-2} (e) h^{-9}
    (b) y^{-7} (d) c (f) 4^4

12. (a) $-5x^2$ (c) $5y^2$ (e) $4a^3$
    (b) $-1.5a^4$ (d) $\frac{9}{4}$ (f) $1\frac{2}{3}$

13. (a) x^6 (c) $\frac{1}{8}$ (e) 10^2
    (b) y^{-4} (d) $x^{10}y^{15}$ (f) $\frac{3}{4}$

14. (a) 7.43×10 (c) 1.36×10^{-1}
    (b) 9.31×10 (d) 4.83×10^{-6}

15. (a) 54, 59 (b) 248, 245

16. (a) 47, 6.7 (b) 19.3, 4.0

17. 12.9

EXERCISE 5.1, PAGE 63

7. (a) $\sqrt{9.0}$ or $\sqrt{900}$. (d) $\sqrt{64.00}$ or $\sqrt{6400}$.
   (b) $\sqrt{81.0}$ (e) $\sqrt{1.0}$
   (c) $\sqrt{144}$. (f) $\sqrt{121}$.

8. (a) $x = \sqrt{41}$ (b) $x = \sqrt{44}$ (c) $x = \sqrt{13}$

10. (a) $x = \sqrt{2}$, $y = \sqrt{3}$, $z = \sqrt{4}$
    (c) Twice as long.

11. $\sqrt{38}$

EXERCISE 5.2, PAGE 66

1. (a) $\sqrt{20}$ (c) $\sqrt{32}$
   (b) $\sqrt{63}$ (d) $\sqrt{3a^2}$

2. (a) $2\sqrt{5}$ (c) $3\sqrt{3}$
   (b) $2\sqrt{3}$ (d) $b^2\sqrt{5}$

3. (a) $6\sqrt{7}$ (c) $2\sqrt{10}$
   (b) $-6\sqrt{2}$ (d) $2\sqrt{13} + 2\sqrt{6}$

4. (a) $10\sqrt{10}$ (c) $10\sqrt{15}$ (e) $100\sqrt{2}$
   (b) $10\sqrt{5}$ (d) $10\sqrt{37}$ (f) $10\sqrt{930}$

5. (a) $\sqrt{507}$ (c) $\sqrt{125}$ (e) $\sqrt{20a^2}$
   (b) $\sqrt{162}$ (d) $\sqrt{3x^2}$ (f) $\sqrt{245x^2y^2}$

6. (a) $5\sqrt{3}$ (c) $7a\sqrt{2}$ (e) $4a\sqrt{5b}$
   (b) $2\sqrt{21}$ (d) $5x\sqrt{2}$ (f) $6m^2n\sqrt{2mn}$

7. (a) $6\sqrt{7}$ (c) $\sqrt{10}$
   (b) $\sqrt{6}$ (d) $6\sqrt{x}$

8. (a) $7\sqrt{2} + 3\sqrt{3}$ (c) $11\sqrt{a} + \sqrt{b}$
   (b) $5\sqrt{5} - 9\sqrt{6}$ (d) $5\sqrt{x} + 2\sqrt{y}$

9. (a) $6\sqrt{3}$ (c) $9\sqrt{2}$ (e) $5\sqrt{5}$
   (b) $9\sqrt{3}$ (d) 0 (f) $2\sqrt{2}$

10. (a) $33\sqrt{2}$ (c) $7\sqrt{5}$
    (b) $10\sqrt{6}$ (d) $-23\sqrt{3}$

11. (a) Correct (c) Incorrect
    (b) Correct (d) Correct

EXERCISE 5.3, PAGE 68

1. (a) 2.65 (e) 8.49 (i) 10.63
   (b) 4.80 (f) 9.54 (j) 17.78
   (c) 6.78 (g) 15.59 (k) 20.22
   (d) 7.28 (h) 13.78 (l) 22.20

2. (a) 59.2 (c) 0.49 (e) 624
   (b) 81.9 (d) 0.686 (f) 0.0436

4. (a) 18.57 (c) 20.17 (e) 9.33
   (b) 12.77 (d) 11.92 (f) 14.83

EXERCISE 5.4, PAGE 72

4. (a) 4.80 (c) 12.6
   (b) 2.24 (d) 48.1

5. (a) 3.3 (c) 3.0 (e) 60.4
   (b) 11.4 (d) 1.16 (f) 0.255

6. 29.9 cm

7. 84 cm^2

EXERCISE 5.5, PAGE 74

1. 32.5 cm

2. (a) 5.26 cm (c) 38.8 mm
   (b) 2.50 m (d) 7.78 cm

3. 38.7 m

4. 28.6 s

5. 2.8 m

6. 46.9 cm by 46.9 cm

EXERCISE 6.1, PAGE 80

7. (a) $-3x - 3y$ (d) $-2x^2 + 4y^2$
   (b) $-9a + 11b$ (e) 0
   (c) 16 mn (f) $-5x - 13y$

8. (a) $-20x$ (d) $-30h^3$
   (b) $-21xy$ (e) $-4t^3$ (g) $-44st$
   (c) $-60a^2$ (f) $24x^5$ (h) $30xy^2$

9. (a) $2x^2 + 3x + 8$ (c) $4a^2 + 3b^2 - 10b$
   (b) $-5mn + 2nq$ (d) $-3a^2 + 2a - 2$

10. (a) $4a$ (c) $-5t^4$ (e) $\frac{1}{2}x^2$
    (b) $-3r^4$ (d) $5y$ (f) $-7t$

11. (a) $8b$ (c) $8x^2y$ (e) $-12x^2y$
    (b) $9x$ (d) $-a$ (f) $\frac{3}{2}x$

EXERCISE 6.2, PAGE 83

7. (a) $10x + 15y$
   (b) $-24a + 12$
   (c) $60c + 15d - 30e$
   (d) $21x - 35$
   (e) $16x + 8y - 8z$
   (f) $-80x^2 + 30y^2$

8. (a) $2(a + b)$
   (b) $5(c - d)$
   (c) $8(r + 2s - 3t)$
   (d) $3(r^2 + 2)$
   (e) $5(3h + k + 5)$
   (f) $6(4t - 1)$

9. (a) $2x^2 + 10x$ (d) $15t^2 + 20t$
   (b) $3a^2 - 21a$ (e) $18xy - 30x$
   (c) $-8y^2 - 4y$ (f) $72ab - 56ac$

10. (a) $5x(x + 3)$ (d) $5a(3b + 5)$
    (b) $3a(a - 2)$ (e) $7x(2x - y)$
    (c) $-4y(2y + 1)$ (f) $11y(3x + 11)$

11. (a) $x^2 + 8x + 10$ (d) $x^2 - 9x + 12$
    (b) $y^2 + y - 4$ (e) $c^2 - 9$
    (c) $b^2 - b - 18$ (f) $2mb$

12. (a) $(x + 2)(x + 3)$
    (b) $(a + 2)(a + 3)$
    (c) $(b - 4)(b + 2)$
    (d) $(x - 1)(x - 5)$

13. $2a + 25$

14. $15x^4 - 6x^2y$

EXERCISE 7.1, PAGE 88

5. (a) $x^2 + 5x + 6$
   (b) $y^2 - 7y + 12$
   (c) $t^2 + 12t + 35$
   (d) $15 + 8a + a^2$
   (e) $24 - 10b + b^2$
   (f) $m^2 + 8m - 20$

6. (a) $y^2 + 4y - 32$
   (b) $c^2 - 5c - 14$
   (c) $t^2 - 5t - 150$
   (d) $y^2 - 64$
   (e) $20 - x - x^2$
   (f) $-x^2 + 9x - 18$

7. (a) $y^2 + 4y + 4$
   (b) $x^2 - 8xy + 16y^2$
   (c) $9 + 6x + x^2$
   (d) $25 - 10h + h^2$
   (e) $a^2 + 2ab + b^2$
   (f) $a^2 - 2ab + b^2$

8. (a) $x^2 - 2x - 15$
   (b) $d^2 + de - 42e^2$
   (c) $-24 + 10p - p^2$
   (d) $a^2 - 4a - 32$
   (e) $x^2 - 81$
   (f) $9 - y^2$
   (g) $-y^2 + 6yz + 40z^2$
   (h) $-x^2 - 3x + 54$

9. (a) $10x^2 + 21x + 8$
   (b) $3a^2 + 34ab + 63b^2$
   (c) $10x^2 - 22x + 4$
   (d) $12 - 41x + 35x^2$
   (e) $8 + 34p + 21p^2$
   (f) $56s^2 - 19st - 15t^2$

10. (a) $56x^2 + 19x - 10$
    (b) $9z^2 - 25$
    (c) $20h^2 - 36h - 8$
    (d) $15 - 3x - 54x^2$
    (e) $100 - 49p^2$
    (f) $25x^2 - 40x + 16$

11. (a) $2x^2 + 12x + 20$
    (b) $25y^2 + 47y + 17$
    (c) $b^2 + 4b - 18$
    (d) $13y^2 + 4y - 35$
    (e) $10p^2 + 20p + 19$
    (f) $14x + 21$

12. (a) $3x^2 + 30x + 72$
    (b) $-2a^2 - 4a + 30$
    (c) $45a^2 - 120\,ab + 80b^2$
    (d) $-50y^2 + 140y - 98$

EXERCISE 7.2, PAGE 92

7. (a) $(x - 4)(x + 4)$
   (b) $(z - 2)(z + 2)$
   (c) $(3 - a)(3 + a)$
   (d) $(m - 8)(m + 8)$
   (e) $(x - 2y)(x + 2y)$
   (f) $(6 - n)(6 + n)$

8. (a) $(9x - 4y)(9x + 4y)$
   (b) $(7a - 1)(7a + 1)$
   (c) $(10 - 3z)(10 + 3z)$
   (d) $(x^2 + 1)(x + 1)(x - 1)$
   (e) $(y^3 - 1)(y^3 + 1)$
   (f) $(a^4 + 1)(a^2 + 1)$
   $(a + 1)(a - 1)$

9. (a) $(a + 2)(a + 1)$
   (b) $(p + 2)(p + 7)$
   (c) $(k + 2)(k + 11)$
   (d) $(t - 4h)(t - 8h)$
   (e) $(r - 9)(r - 5)$
   (f) $(s - 7t)(s - 9t)$

10. (a) $(x - 5)^2$
    (b) $(y - 2z)(y + 8z)$
    (c) $(t + 4)^2$
    (d) $(h + 7)(h - 5)$
    (e) $(g + 6h)(g - 9h)$
    (f) $(k - 3)(k + 7)$

11. (a) $(w - 6)(w - 1)$
    (b) $(z - 8)(z + 1)$
    (c) $(r + 10)(r - 8)$
    (d) $(t - 10)(t + 8)$
    (e) $(h + 2)(h + 1)$
    (f) $(k + 4)(k - 1)$
    (g) $(c - 3)(c + 8)$
    (h) $(c + 3)(c - 8)$

12. (a) $(t + 2)(t + 6)$
    (b) $(r - 3)(r - 4)$
    (c) $(s + 12)(s + 1)$
    (d) $(q + 3)(q - 4)$
    (e) $(x - 20)(x - 1)$
    (f) $(y + 5)(y + 4)$
    (g) $(z - 2)(z - 10)$
    (h) $(w - 20)(w + 1)$

13. (a) $(x - 4)(x + 4)$
    (b) $(y - 12)(y - 4)$
    (c) $(y - 3)(y + 3)$
    (d) $(z - 3)(z - 6)$
    (e) $(b - 6)(b + 6)$
    (f) $(c - 6)^2$
    (g) $(h + 7k)(h - 7k)$
    (h) $(h + 7k)^2$

14. (a) $5(x - 2)(x - 1)$
    (b) $3(2a - 3b)(2a + 3b)$
    (c) $x(x - 3)(x - 4)$
    (d) $c(c - b)(c + b)$
    (e) $2(x - 7)(x + 5)$
    (f) $2x(y - 5)(y + 1)$

EXERCISE 7.3, PAGE 95

5. (a) $2x^2 + x - 28$
   (b) $9y^2 - 60y + 100$
   (c) $15a^2 - 43a + 30$
   (d) $24b^2 + 54b + 12$
   (e) $36y^2 - 9y - 10$
   (f) $40a^2 + 62a - 63$

6. (a) $38b^2 - 25b + 3$
   (b) $y^2 + 7y - 19$
   (c) $15y^2 - 69y + 98$
   (d) $2h^2 - 32h + 7$

7. (a) $(2x + 1)(x + 5)$
   (b) $(2y + 5)(y + 1)$
   (c) $(2a - 1)^2$
   (d) $(4b - 1)(b - 1)$
   (e) $(3h - 1)(h - 7)$
   (f) $(3h - 7)(h - 1)$
   (g) $(3h - 7)(h + 1)$
   (h) $(3h + 7)(h - 1)$

8. (a) $2(5a - 3)(a - 1)$
   (b) $(10b - 1)(b - 6)$
   (c) $(5c - 6)(2c - 1)$
   (d) $2(5d - 1)(d - 3)$
   (e) $(10e - 3)(e - 2)$
   (f) $2(5f - 3)(f + 1)$
   (g) $(10g + 1)(g - 6)$
   (h) $(10h - 3)(h + 2)$
   (i) $2(5i + 1)(i - 3)$
   (j) $(2j + 1)(5j - 6)$

9. (a) $(5y + 1)(y + 3)$
   (b) $(7y - 1)(y - 11)$
   (c) $(2r - 13)(r - 1)$
   (d) $(5t + 3)(t + 2)$
   (e) $(3p - 2)(p - 2)$
   (f) $(7q - 2)(q - 4)$

10. (a) $(5x + 1)(2x + 3)$
    (b) $(3y - 1)(6y - 5)$
    (c) $(3z + 1)(7z + 2)$
    (d) $(2m - 3)(4m - 3)$
    (e) $(7h + 6)(2h + 1)$
    (f) $(2s - 15)(2s - 1)$

11. (a) $(2s - 1)(s + 3)$
    (b) $(5r + 2)(r - 1)$
    (c) $(2a + 1)(a - 3)$
    (d) $(5h - 2)(h + 1)$
    (e) $(7h - 5)(h + 1)$
    (f) $(2m - 3)(m + 3)$
    (g) $(7t + 5)(t - 1)$
    (h) $(2k + 3)(k - 3)$

12. (a) $(5t + 3)(t - 2)$
    (b) $(4h + 3)(2h - 1)$
    (c) $(5x + 2)(x - 5)$
    (d) $(2y + 1)(2y - 9)$
    (e) $(5s - 6)(s + 2)$
    (f) $(7z + 5)(2z - 3)$

13. (a) $(s - 3)(s - 7)$
    (b) $(3m - 1)(5m - 1)$
    (c) $(6t + 5)(t - 1)$
    (d) $(2y + 1)(4y + 9)$
    (e) $(3a + 4)(a - 5)$
    (f) $(4x - 5)^2$
    (g) $(2r - 5)(2r + 6)$
    (h) $(8 + 3h)(1 - 2h)$
    (i) $(2p - 5)(6p - 1)$
    (j) $(7z - 6)^2$

14. (a) $x(x - y)$
    (b) $3(k - 2)(k + 2)$
    (c) $(5x + 1)^2$
    (d) $4(3x^2 - 10x - 1)$
    (e) $(5m - 2)(3m + 7)$
    (f) $(a + 4)(a - 18)$
    (g) $4(x + 3)(x - 7)$
    (h) $3(2t + 1)(3t - 4)$

15. $5(x + 2)(x - 2)(x + 3)(x - 3)$

EXERCISE 8.1, PAGE 102

6. (a) $-\frac{6}{5}$ (d) y (g) t^4
   (b) $\frac{8}{3}$ (e) a (h) $-y$
   (c) $-2t$ (f) $-2t^2$ (i) $\frac{a}{2}$

7. (a) $3s$ (c) 1 (e) 0
   (b) $-\frac{3}{5}y$ (d) $\frac{3}{4}y$ (f) impossible

8. (a) $\frac{3a}{2}$ (d) $-2k$ (g) $-\frac{7s}{r}$
   (b) $-4y$ (e) $\frac{3x}{2}$ (h) $-\frac{5a}{b^2}$
   (c) $2h$ (f) $-\frac{7}{2}xy^2$ (i) $\frac{y}{3}$

9. $\$\frac{x}{12}$, $\$5x$

10. 7 km/h, $6y$ h

11. $35y¢$

12. $2rs^2$ zips

13. (a) mn
    (b) $\frac{3r^2}{h}$

EXERCISE 8.2, PAGE 104

5. (a) $x + 5$ (d) $\frac{5y + 8}{3}$
   (b) $-x + 3$ (e) $4b - 3a - 6$
   (c) $\frac{(r - 3s)}{2}$ (f) $\frac{5x^2 + 9x - 16}{4}$

6. (a) $r + 2$ (d) $4a - 5b$
   (b) $x - 2y$ (e) $-2r^2 - 3r + 4$
   (c) $-4x^2 + 2x - 3$ (f) $\frac{6t^2 - 5}{3}$

7. $(2x + 3y)$ km/h

8. $(x^2 - 2x + 3)$ cm

9. $(yz + 2x)$ m

10. $(x - 3)$ cm

EXERCISE 8.3, PAGE 108

7. (a) $(x - 3)(x + 3)$ (e) $(b - 4)(b + 7)$
   (b) $(y - 2)(y + 2)$ (f) $(t - 8)(t + 3)$
   (c) $(a - 2)(a - 4)$ (g) $(2a - 5)(2a + 5)$
   (d) $(y + 3)^2$ (h) $(m - 6)^2$

8. (a) 3 (d) $a - 2$ (g) $a + 6$
   (b) 5 (e) $b + 5$ (h) $\frac{b + 5}{2}$
   (c) $x - 2$ (f) $h + 3$

9. (a) $x + 4$ (c) $x + 7$
   (b) $a + 2$ (d) $y^2 + 4y + 3$

10. (a) $y + 2 - \frac{4}{y + 3}$

(b) $y^2 + 4y + 7 + \frac{17}{y - 2}$

(c) $a^2 - 9a + 32 - \frac{97}{a + 3}$

(d) $x + 2 + \frac{3}{x - 5}$

11. (a) $a^2 - 5a + 1$

(b) $x^2 + x + 6 + \frac{22}{x - 3}$

(c) $x + 1$

(d) $a^2 - a - 1$

EXERCISE 8.4, PAGE 110

3. (a) $\frac{12}{x - y}$ (c) $\frac{1}{y + 2}$

(b) $\frac{7x}{a + b}$ (d) $b + 5$

4. (a) $\frac{11m}{10}$

(b) $\frac{4y - 5x}{xy}$

(c) $\frac{9x^2 + 10y^2}{15xy}$

(d) $\frac{9a + 24}{(a + 2)(a + 3)}$

(e) $\frac{6p + 60}{(p - 6)(p + 6)}$

(f) $\frac{2x^2 - 8x - 4}{(x - 4)(x - 5)}$

(g) $\frac{3y^2 - 11y + 20}{3y(y - 4)}$

(h) $\frac{5k - 39}{(k + 3)(k - 3)}$

(i) $\frac{4 - a}{a(a - 1)}$

5. (a) $\frac{-2}{15(x - 1)}$

(b) $\frac{7x^2 - 54x}{20(x + 3)(x - 2)}$

(c) $\frac{2}{a + b}$

(d) 0

(e) $\frac{1}{x + 2}$

MBS EXERCISE 2, PAGE 112

1. (a) rational (d) rational
(b) rational (e) rational
(c) rational (f) irrational

2. (a) $\frac{7}{20}$ (c) $\frac{1}{8}$ (e) $\frac{13}{3}$

(b) $\frac{3}{2}$ (d) $\frac{5}{4}$ (f) $\frac{238}{33}$

3. (a) 3.36 (d) 0.04 (g) 5.6

(b) 5.76 (e) $-\frac{1}{8}$ (h) 0

(c) 1 (f) $\frac{23}{4}$ (i) 6

4. (a) $\frac{5}{4}$ (c) 2

(b) $3\frac{1}{10}$ (d) $\frac{7}{5}$

5.

Fraction	Decimal	Percent
$\frac{2}{5}$	0.4	40
$\frac{7}{10}$	0.7	70
$\frac{3}{20}$	0.15	15
$\frac{5}{6}$	$0.8\dot{3}$	$83\frac{1}{3}$
$\frac{5}{3}$	$1.\dot{6}$	$166\frac{2}{3}$
$\frac{13}{80}$	0.1625	16.25

6. (a) $\sqrt{50}$ (c) $\sqrt{98}$ (e) $\sqrt{5x^2}$
(b) $\sqrt{12}$ (d) $\sqrt{80}$ (f) $\sqrt{a^2b}$

7. (a) $2\sqrt{3}$ (c) $4\sqrt{5}$ (e) $6\sqrt{2}$
(b) $4\sqrt{3}$ (d) $3\sqrt{2}$ (f) $12\sqrt{2}$

8. (a) $9\sqrt{2}$ (c) $-9\sqrt{2}$
(b) $5\sqrt{3}$ (d) $-8\sqrt{5}$

9. (a) 4.28 (c) 0.642 (e) 112
(b) 17.2 (d) 1.73 (f) 2.65

10. (a) $5a + 3b$ (d) $4x^2 + 6x$
(b) $-x - y$ (e) $3h^2 + 2t^2 - 4$
(c) $m + 4$ (f) $-3x^2 + 5x - 3$

11. (a) $15x^2$ (c) $-12a^3$ (e) $10t^3$
(b) $-4y$ (d) $\frac{5a}{4b}$ (f) $-75m$

12. (a) $2a + 2b$
(b) $2a - 3b$
(c) $4x^2 + 4x - 4$
(d) $3x - 2$
(e) $-6a^3 + 8a^2 - 10a$
(f) $5a^3b - 5ab^3$

13. (a) $a - 5b$ (c) $-x^2 - 7x + 12$
(b) $x^2 + y^2$ (d) $18t^2 + 5t$

14. (a) $4a^2 - b^2$
(b) $10x^2 - 7xy - 12y^2$
(c) $25n^2 + 70np + 49p^2$
(d) $15y^2 + 17yz - 4z^2$
(e) $25s^2 - 9t^2$
(f) $4x^2 - 32xy + 64y^2$

15. (a) $2x^2 + 13x + 22$
(b) $-h^2 - 14h + 1$
(c) $31b^2 - 48bc + 9c^2$
(d) $2m^2 - 3mn - 11n^2$

16. (a) $5(a + 3b - 2c)$
(b) $x(x - 2y + 5)$
(c) $8a(2a - 3b)$
(d) $(x - 2)(x + 5)$

17. (a) $(3x - 2y)(3x + 2y)$
(b) $2(t - 6)(t + 6)$
(c) $(2h + 7)^2$
(d) $4(2b - 3c)^2$

18. (a) $\frac{a + 5}{a + 1}$ (b) $x^2 - 4x - 3 - \frac{4}{x - 1}$

19. (a) $\frac{25a^2 + 4b^2}{10ab}$ (b) $\frac{5m}{(m - 3)(m + 2)}$

REVIEW EXERCISE, PAGE 118

1. (a) 6 (d) 63.24 (g) -5
(b) -3.21 (e) 1983.52 (h) $\frac{107}{8}$
(c) 845.43 (f) 19.4 (i) $6.\dot{6}$

2. (a) 11 (c) 1
(b) -3 (d) -8

3. (a) 17.25 cm to 17.34 cm
(b) 0.635 cm to 0.644 cm
(c) 0.0015 m to 0.0024 m

4. (a) 3.49×10^6 (c) 4.33×10^6
(b) 3.97×10^2 (d) 2.48×10^{-1}

5. 102.6 cm

6. 45 cm

7. \$37.71

8. 80.178 kl^3

9. 706.5 cm^2

10. 2462 cm^2

11. (a) 1 (c) $\frac{4}{9}$ (e) 16
(b) $\frac{1}{5}$ (d) -27 (f) $-\frac{5}{3}$

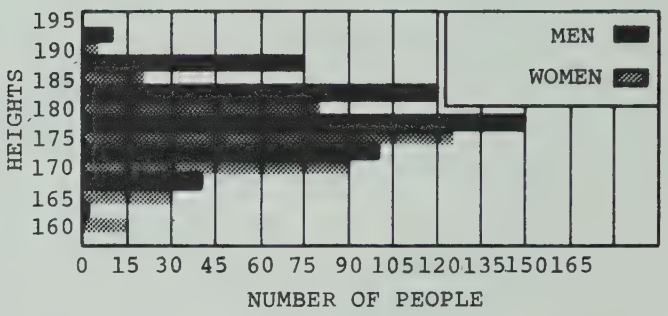
12. (a) x^3y^3 (c) $\frac{a^2}{b^2}$ (e) $-3st$
(b) $-15x^3$ (d) $\frac{-2y}{x}$ (f) $x^{10}y^5z^{15}$

13. (a) Range 92 kg - 130 kg
Median 108.5 kg
Mean 108.8 kg
Av. Dev. 8.4 kg

(b) Range 15.1 years - 17.0 years
Median 16.0 years
Mean 15.96 years
Av. Dev. 0.46 year

14. (a) 20, 40 (b) 150 (c) \$580

15.



16. (a) $\frac{7}{100}$ (c) $\frac{63}{20}$ (e) $\frac{109}{20}$
(b) $\frac{4}{3}$ (d) $\frac{2}{9}$ (f) $\frac{31}{99}$

17. (a) 0.5, 0, 1
(b) 0.75, 0, 1
(c) $0.\dot{4}$, 4, 1
(d) $0.\dot{4}28571\dot{}$, 428571, 6
(e) $0.\dot{6}\dot{3}$, 63, 2
(f) $0.\dot{1}53846\dot{}$, 153846, 6

18. 9 skirts, $0.1\dot{6}$ m

19. 17.5

20. 10%

21. (a) $\sqrt{35}$ (c) $8\sqrt{5}$ (e) $-\sqrt{7}$
(b) 3 (d) 9 (f) $4\sqrt{5}$

22. (a) 8.6 (c) 0.624
(b) 510 (d) 0.0361

23. 6.71 m

24. 46.5 m/s

25. (a) 2.3 (c) 0.072
(b) 16.6 (d) 30.7

26. 139.4 m

27. (a) $x + 3y$ (c) $4x^2 + x$
(b) $-x + 12$ (d) $a^2 + a + 12$

28. (a) $x^2 + 5x + 6$
(b) $3a^3 - 6a^2 - 12a$
(c) $20b^2 + 11b - 3$
(d) $-4m^2np + 6mn^2p - 2mnp^2$
(e) $25x^2 - 30xy + 9y^2$
(f) $2t^3 - t^2 - 13t + 15$

29. (a) $-x - 2y + 3$ (d) $a + 3$
(b) $x + 4$ (e) $b - 1$ Rem -2
(c) $-5xz$ (f) $r^2 + 4r - 1$

30. (a) $(y - 6)(y - 2)$
(b) $2(a + 2b - 3c)$
(c) $(3g - h)(3g + h)$
(d) $(x + 2)^2$
(e) $(t - 6)(t + 3)$
(f) $x(x + y - 5)$

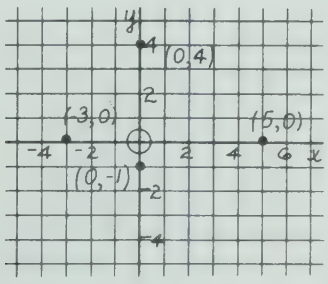
31. (a) $\frac{x - 5}{x + 2}$ (c) $\frac{x + 3y}{x + 4y}$
(b) $\frac{x - 4}{x}$ (d) $\frac{3x - 2}{x}$

32. (a) $34a^2 + 4ab + 2b^2$
(b) $-30y^2 - 28y + 16$
(c) $15x^2 - 5x - 1$
(d) $105x^2 - 78xy + 9y^2$

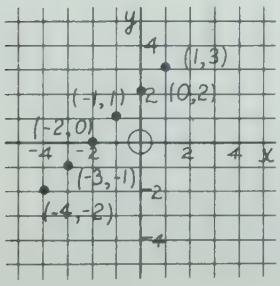
33. (a) $\frac{8}{x}$ (d) $\frac{3y - 2x}{6xy}$
(b) $\frac{3a}{b}$ (e) 2
(c) $\frac{5k + 2m}{mk}$ (f) $\frac{7a^2 + 11a}{(a + 1)(a + 3)}$

EXERCISE 9.1, PAGE 126

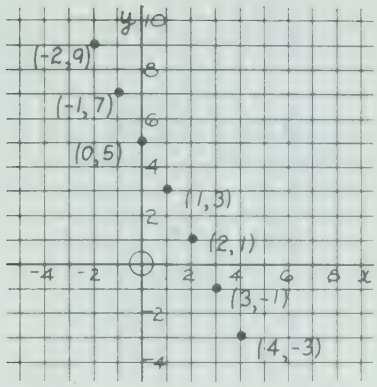
7. (a)



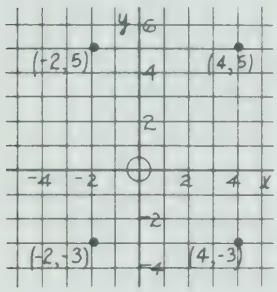
(b)



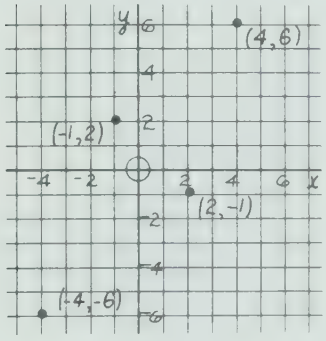
(c)



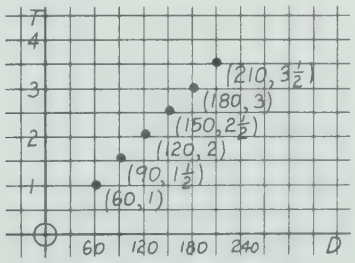
(d)



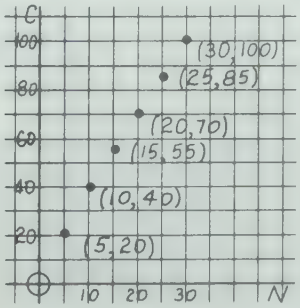
(e)



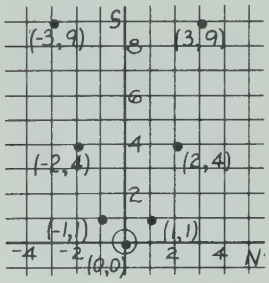
8. (a) (60,1), (90,1½), (120,2), (150,2½), (180,3), (210,3½)



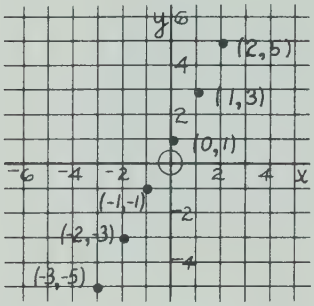
(b) (5,20), (10,40), (15,55), (20,70), (25,85), (30,100)



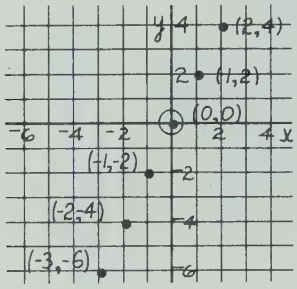
(c) (-3,9), (-2,4), (-1,1), (0,0), (1,1), (2,4), (3,9)



(d) (-3,-5), (-2,-3), (-1,-1), (0,1), (1,3), (2,5)

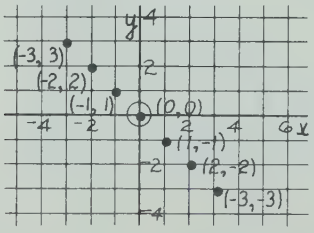


9. (-3,-6), (-2,-4), (-1,-2), (0,0), (1,2), (2,4)



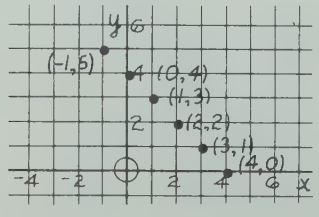
Pattern is a straight line.

10. (-3,3), (-2,2), (-1,1), (1,-1), (2,-2), (3,-3)

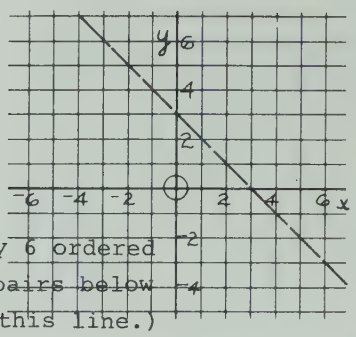


Pattern is a straight line.

11. (a) (0,4), (1,3), (2,2), (3,1) (4,0), (-1,5)



(b) (-1,3), (0,2), (1,1), (2,0) (3,-1), (4,-2)

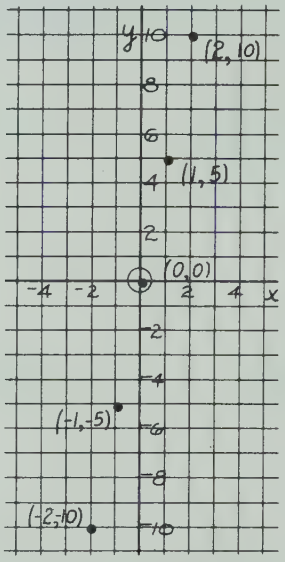


(Any 6 ordered pairs below this line.)

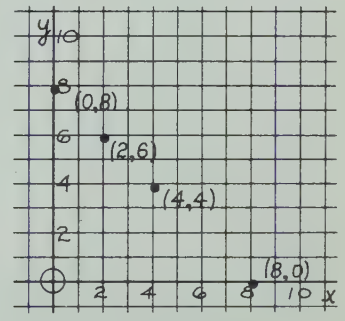
EXERCISE 9.2, PAGE 129

6. (a) y = 5x (c) y = x + 3
   (b) y = 8 - x (d) y = x - 1

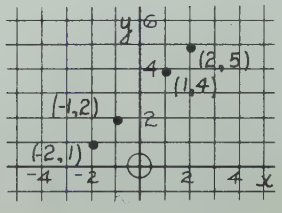
7. (a) (-2,-10), (-1,-5), (1,5), (2,10)



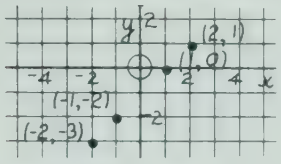
(b) (0,8), (2,6), (4,4), (8,0)



(c) (-2,1), (-1,2), (1,4), (2,5)



(d) (-2,-3), (-1,-2), (1,0), (2,1)



8. (a) (i) {(-4,-4), (-3,-3), (-2,-2), (-1,-1), (0,0), (1,1), (2,2), (3,3), (4,4)}

(ii) The first coordinate is the same as the second coordinate.

(iii) $x = y$

(b) (i) {(-2,4), (-1,3), (0,2), (1,1), (2,0), (3,-1), (4,-2)}

(ii) The sum of the first coordinate and the second coordinate is 2.

(iii) $x + y = 2$

(c) (i) {(-2,-4), (-1,-2), (1,2), (2,4), (3,6)}

(ii) The second coordinate is twice as large as the first coordinate.

(iii) $y = 2x$

(d) (i) {(-3,9), (-2,4), (-1,1), (0,0), (1,1), (2,4), (3,9)}

(ii) The second coordinate is the square of the first coordinate.

(iii) $y = x^2$

9. (a) {(6,1), (6,2), (6,3), (6,4), (6,5), (6,6), (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (4,1), (4,2), (4,3), (4,4), (4,5), (4,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (2,1), (2,2), (2,3), (2,4), (2,5), (2,6), (1,1), (1,2), (1,3), (1,4), (1,5), (1,6)}

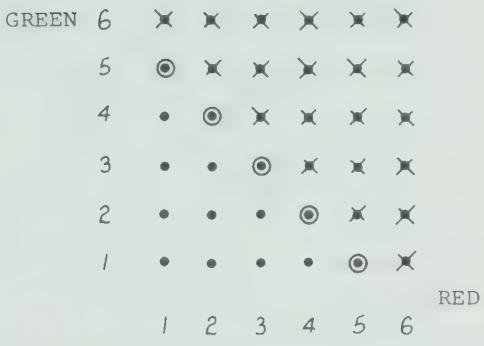
(b) and (c)

Straight lines.

10.

Straight lines parallel to the x and y axes.

11.



The crosses are in the region above the line $x + y = 6$.
The dots are in the region below the line $x + y = 6$.

EXERCISE 9.3, PAGE 134

3. (a) {(-1,-1), (-2,-2), (0,0), (1,1), (2,2), (3,3)}

(b) {(-3,0), (-2,1), (-1,2), (0,3), (1,4), (2,5)}

(c) {(-3,9), (-2,8), (-1,7), (0,6), (1,5), (2,4)}

(d) {(2,3), (4,6), (6,9), (0,0), (-2,-3), (-4,-6)}

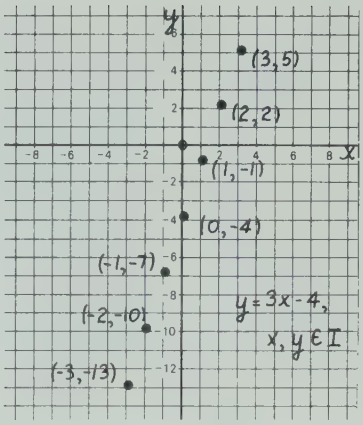
(e) {(3,3), (4,5), (-1,-5), (0,-3), (1,-1), (2,1)}

(f) {(6,5), (5,4), (4,3), (3,2), (2,1), (1,0)}

Note: Many other ordered pairs are possible.

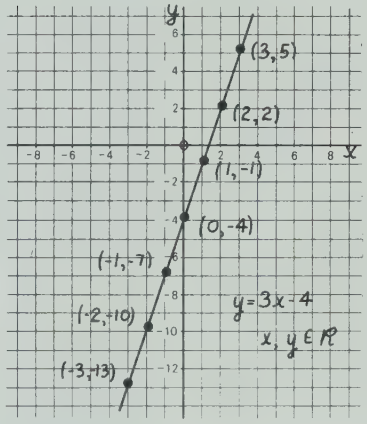
4. (a)

x	y
-3	-13
-2	-10
-1	-7
0	-4
1	-1
2	2
3	5



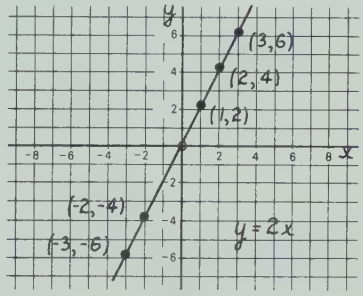
(b)

x	y
-3	-13
$-2\frac{1}{2}$	$-11\frac{1}{2}$
-2	-10
$-1\frac{1}{2}$	$-8\frac{1}{2}$
-1	-7
$-\frac{1}{2}$	$-5\frac{1}{2}$
0	-4
$\frac{1}{2}$	$-2\frac{1}{2}$
1	-1
$1\frac{1}{2}$	$\frac{1}{2}$
2	2
$2\frac{1}{2}$	$3\frac{1}{2}$
3	5



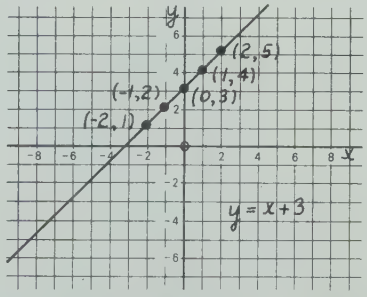
5. (a)

x	y
-3	-6
-2	-4
-1	-2
0	0
1	2
2	4
3	6



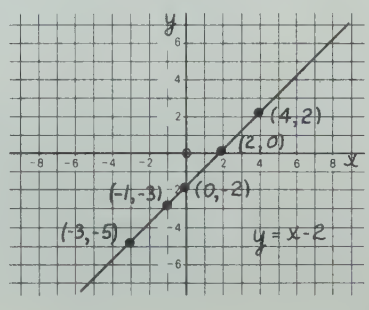
(b)

x	y
-2	1
-1	2
0	3
1	4
2	5



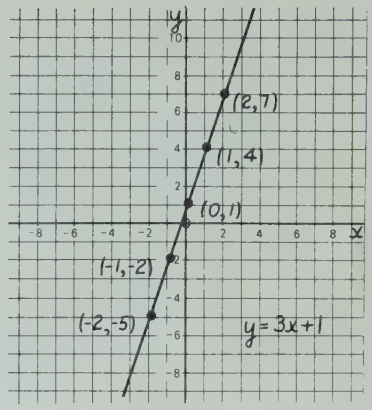
(c)

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0



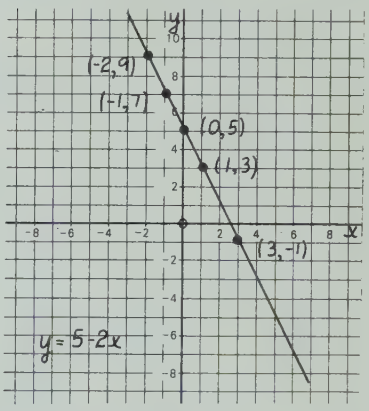
(d)

x	y
-2	-5
-1	-2
0	1
1	4
2	7



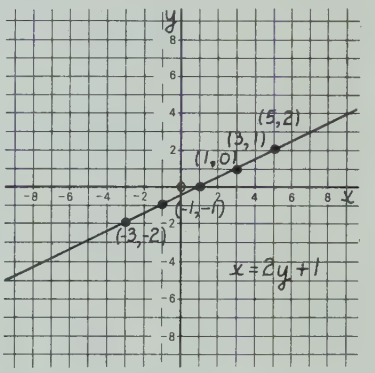
(e)

x	y
-2	9
-1	7
0	5
1	3
2	1
3	-1



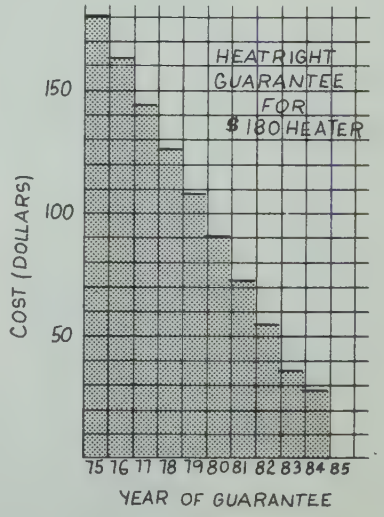
(f)

x	y
1	0
3	1
-1	-1
5	2
-3	-2



6. (a)

Year	Cost
Jan. 1, 1975	180
Jan. 1, 1976	162
Jan. 1, 1977	144
Jan. 1, 1978	126
Jan. 1, 1979	108
Jan. 1, 1980	90
Jan. 1, 1981	72
Jan. 1, 1982	54
Jan. 1, 1983	36
Jan. 1, 1984	18
Jan. 1, 1985	0

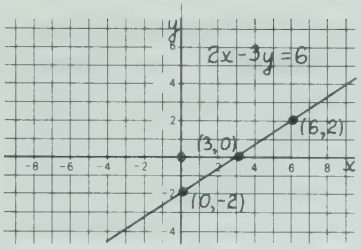


(b) In 1981 he must pay $(240 - 72)
= $168

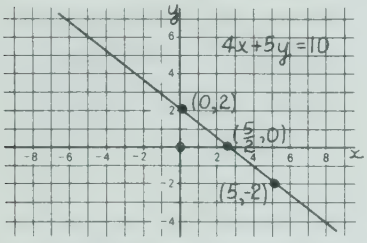
(c) Guarantee ends January 1, 1985

EXERCISE 10.1, PAGE 139

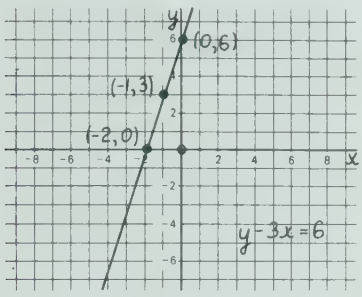
3. (a)



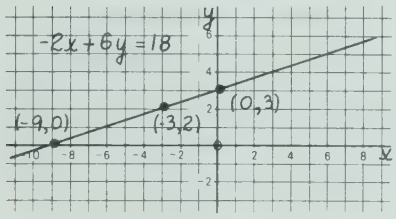
(b)



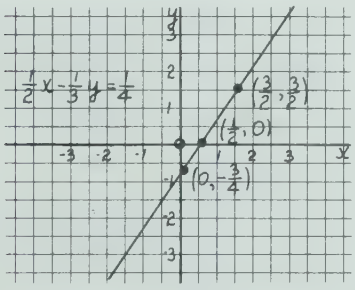
(c)



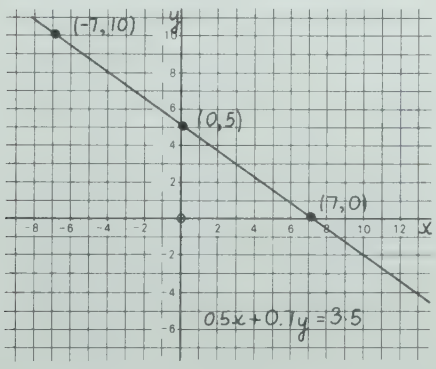
(d)



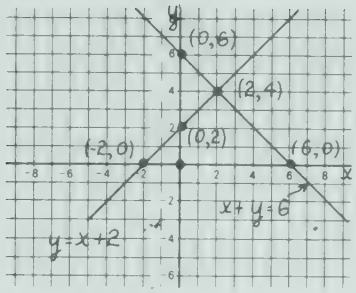
(e)



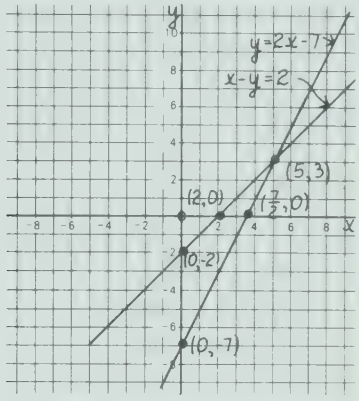
(f)



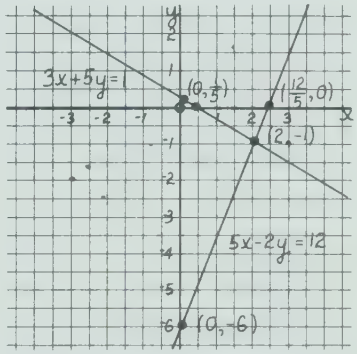
4. (a) (2,4)



(b) (5,3)



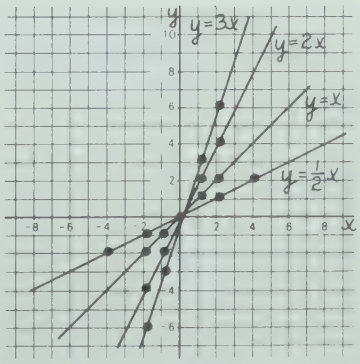
(c) (2,-1)



5. The point satisfies both equations.
∴ The lines are concurrent through the point (3,-1).

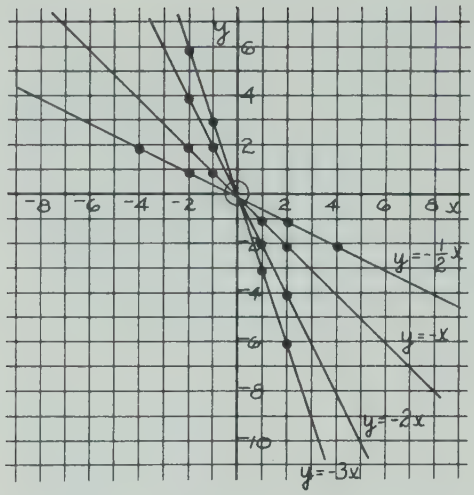
6. The lines do not intersect at all.
∴ They are parallel.

7. (a)



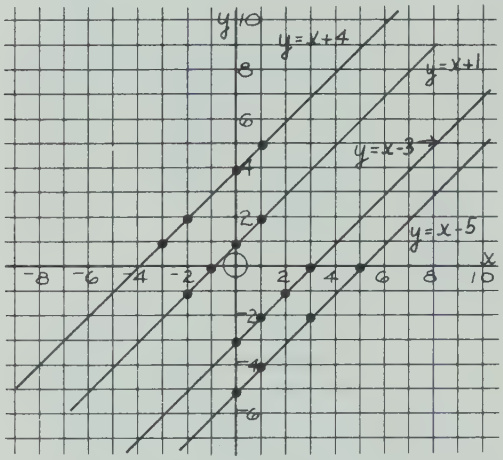
The lines all intersect at the origin.

(b)



The lines all intersect at the origin.

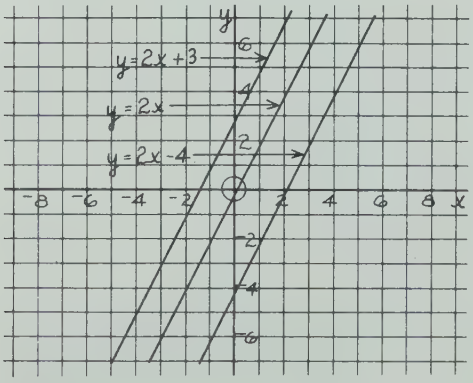
8.



These lines do not intersect at any point.

∴ They are all parallel.

9.



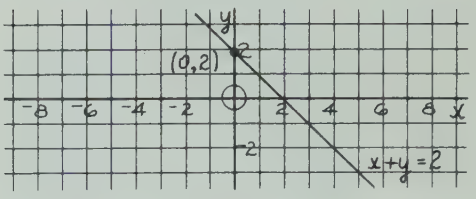
The lines are parallel.

EXERCISE 10.2, PAGE 143

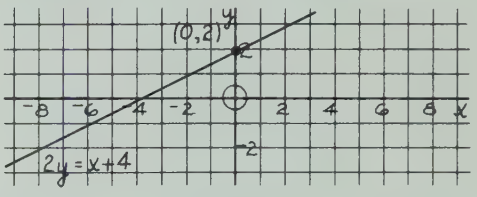
4. (a) 2 (c) 0 (e) undefined
   (b) -1 (d) $-\frac{1}{2}$ (f) $-\frac{7}{5}$

5. (a) $y = -x + 2$, -1, 2
   (b) $y = \frac{1}{2}x + 2$, $\frac{1}{2}$, 2
   (c) $y = x + 3$, 1, 3
   (d) $y = 2x - 1$, 2, -1
   (e) $y = \frac{4}{3}x - 1$, $\frac{4}{3}$, -1
   (f) $y = \frac{5}{4}x - \frac{3}{4}$, $\frac{5}{4}$, $-\frac{3}{4}$

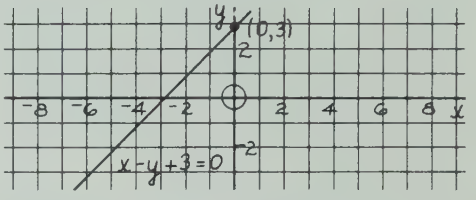
6. (a)



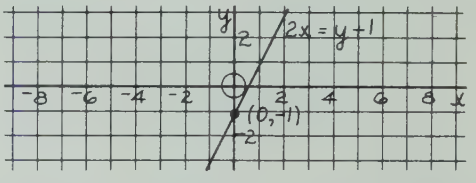
(b)



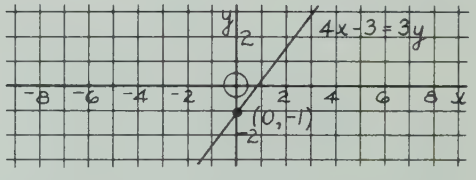
(c)



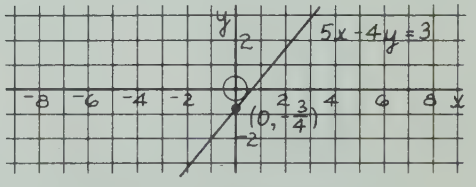
(d)



(e)

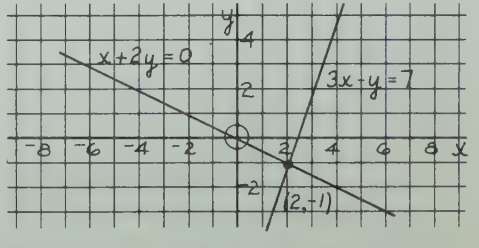


(f)



7. $5x - 7y + 1 = 0$ is "steeper".

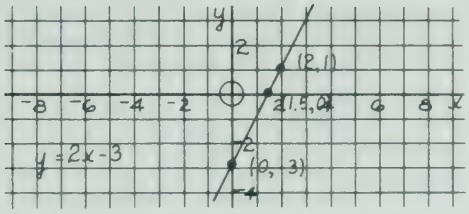
8.



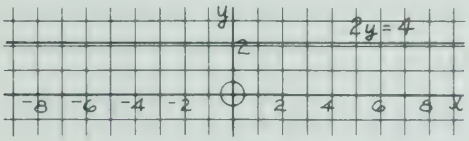
Intersection point is (2,-1).

EXERCISE 10.3, PAGE 149

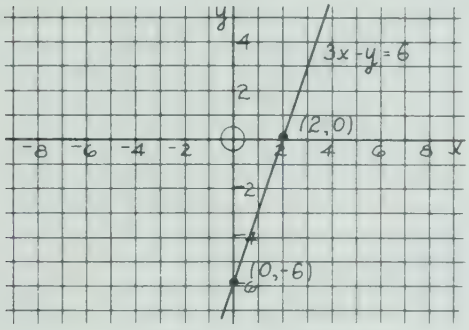
2. (a)



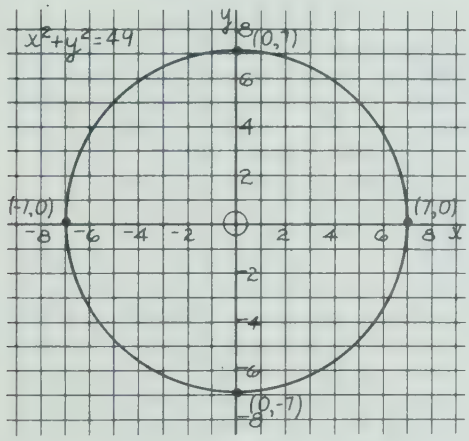
(b)



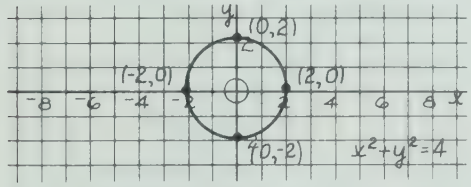
(c)



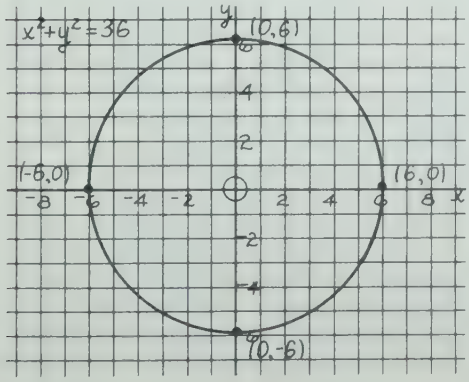
3. (a)



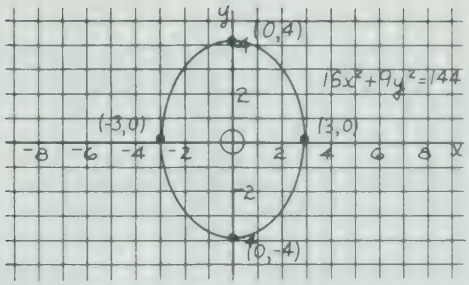
(b)



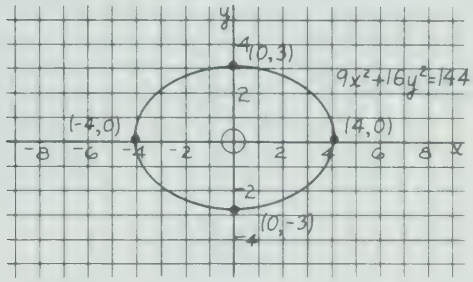
(c)



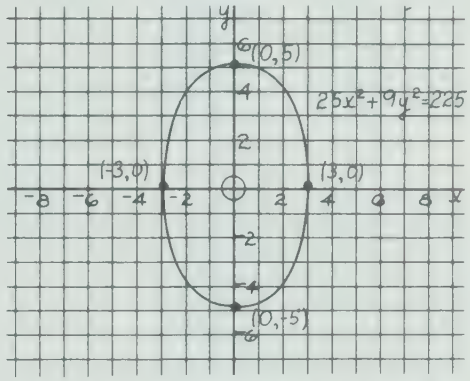
4. (a)



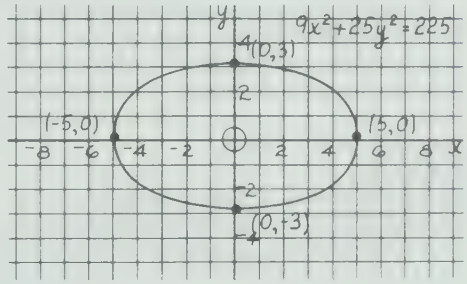
(b)



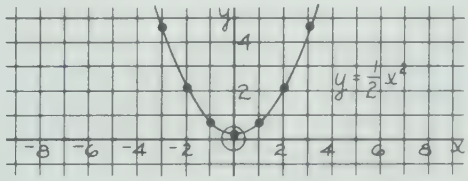
(c)



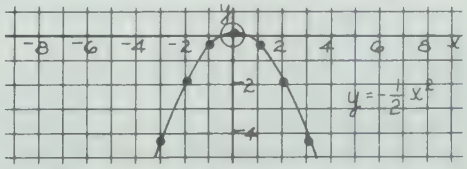
(d)



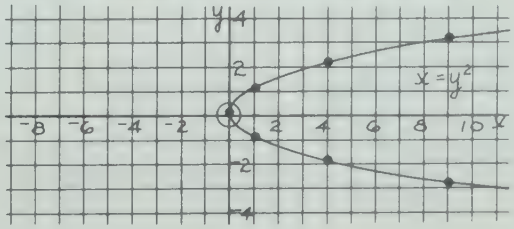
5. (a)



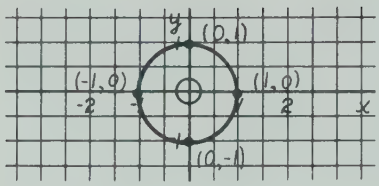
(b)



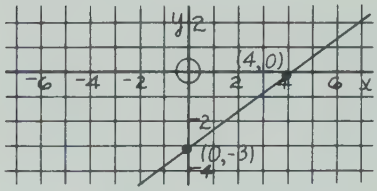
(c)



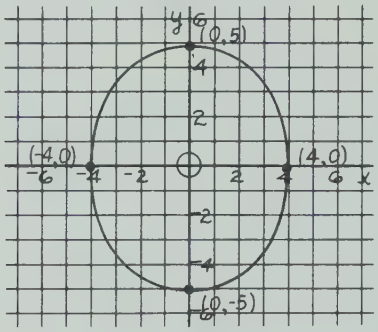
6. (a) $x^2 + y^2 = 1$



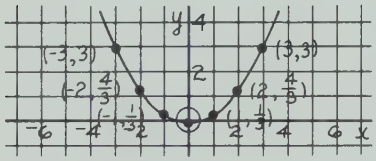
(b) $3x - 4y = 12$



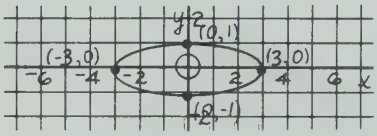
(c) $25x^2 + 16y^2 = 400$



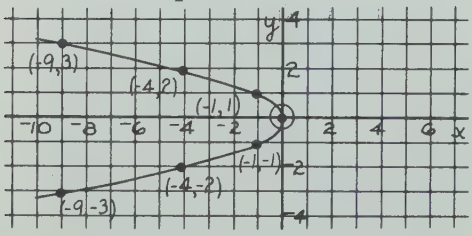
(d) $y = \frac{1}{3}x^2$



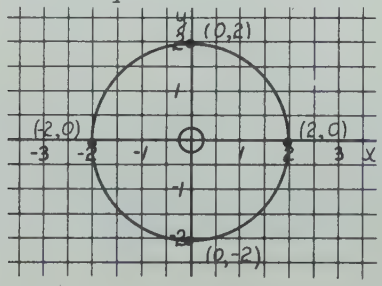
(e) $x^2 + 9y^2 = 9$



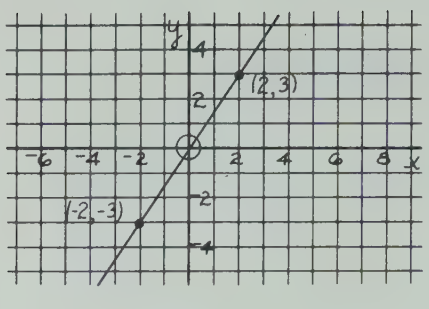
(f) $x = -y^2$



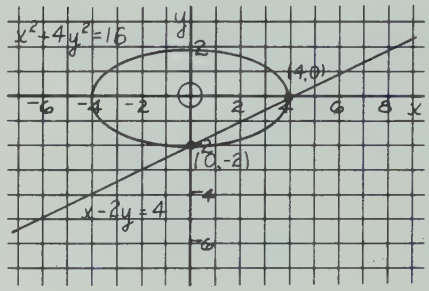
(g) $4x^2 + 4y^2 = 16$



(h) $3x = 2y$

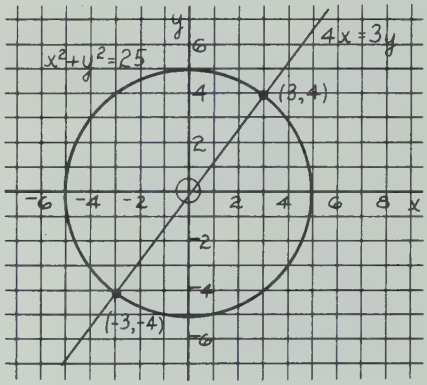


7. (a)



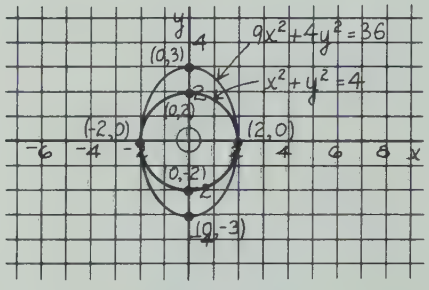
Intersection points are (0,-2), (4,0)

(b)



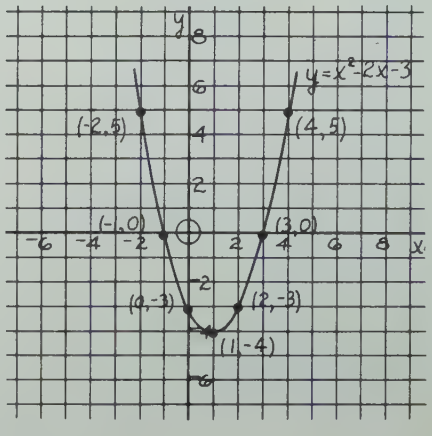
Intersection points are (3,4), (-3,-4)

(c)



Intersection points are (2,0), (-2,0)

8.



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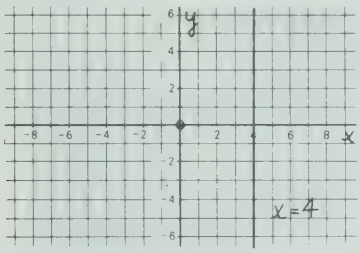
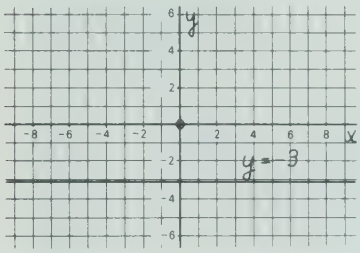
6. (a) $x > 2$ (c) $x < 3$ (e) $y > 1$
   (b) $y \leq 1$ (d) $x \leq -2$ (f) $y \geq -2\frac{1}{2}$

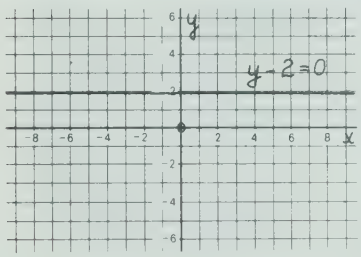
7. (a)



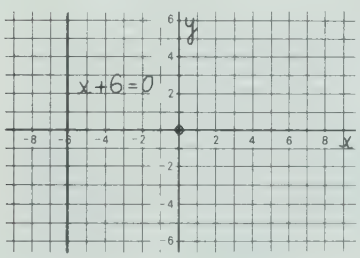
(b)



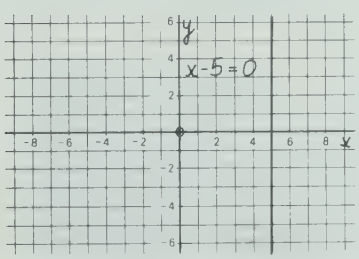
(c)



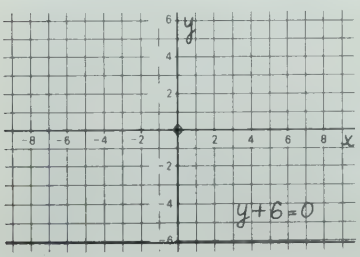
(d)



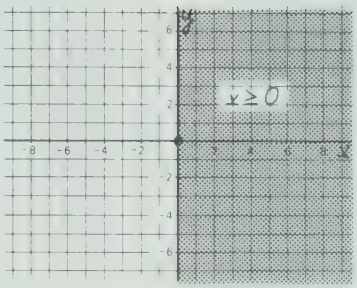
(e)



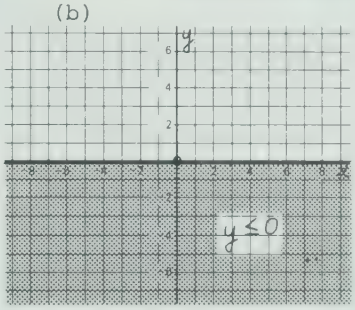
(f)



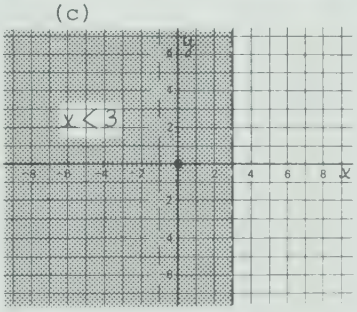
8. (a)



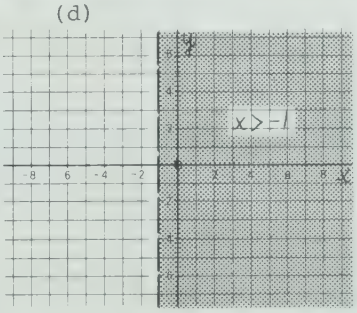
(b)



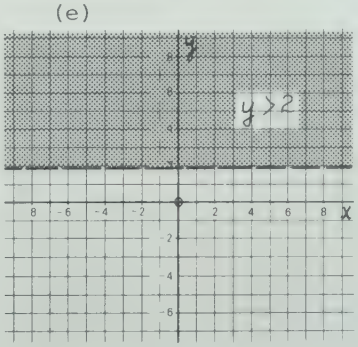
(c)



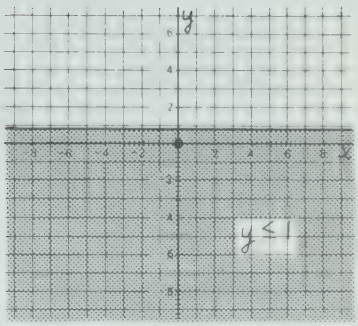
(d)



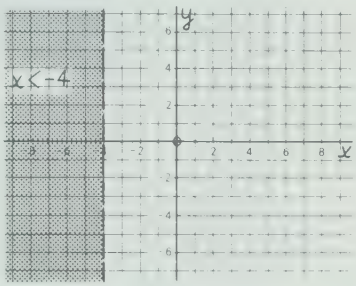
(e)



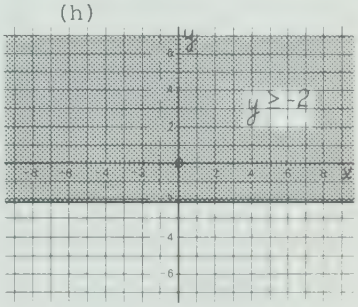
(f)



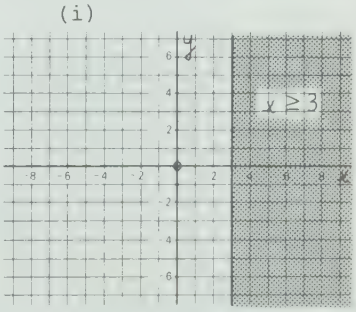
(g)



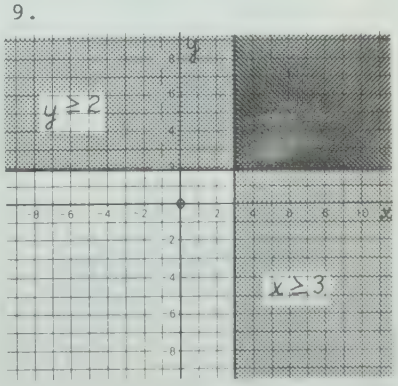
(h)



(i)



9.



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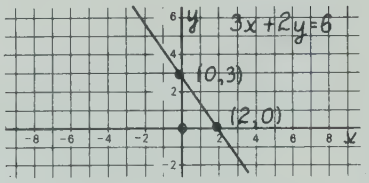
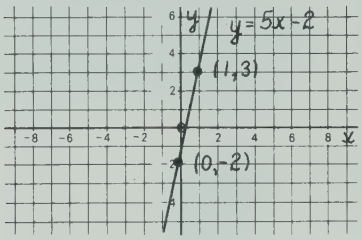
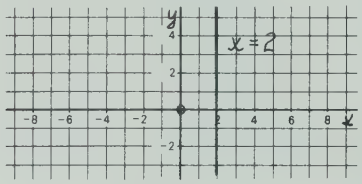
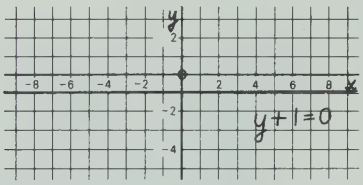
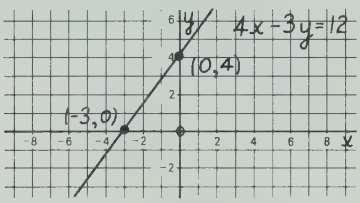
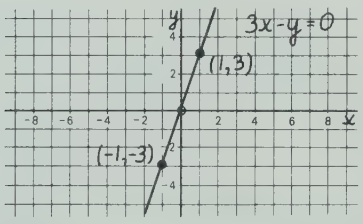
6. (a) 

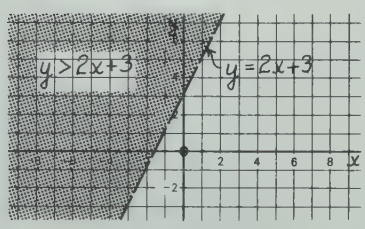
(b) 

(c) 

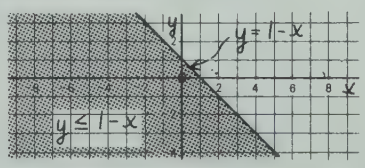
(d) 

(e) 

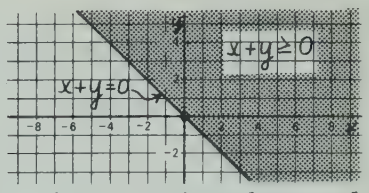
(f) 

7. (a) 

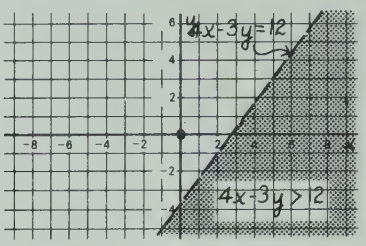
Region is above boundary.

(b) 

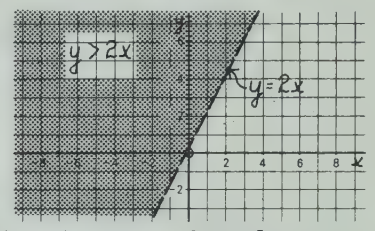
Region includes boundary and area below it.

(c) 

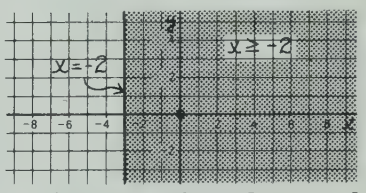
Region includes boundary and area above it.

(d) 

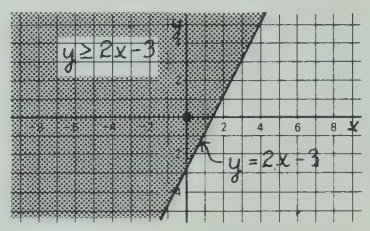
Region is below boundary.

(e) 

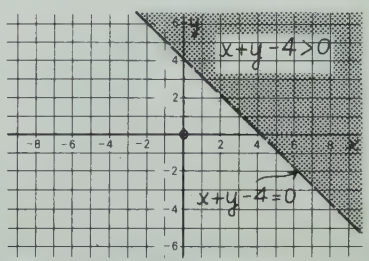
Region is above boundary.

(f) 

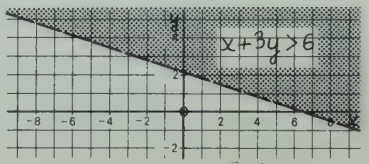
Region includes boundary and area to the right of it.

(g) 

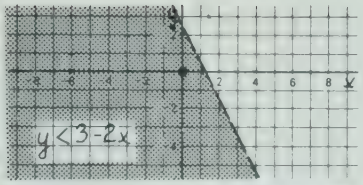
Region includes boundary and area above it.

(h) 

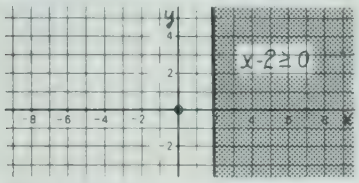
Region is above boundary.

8. (a) 

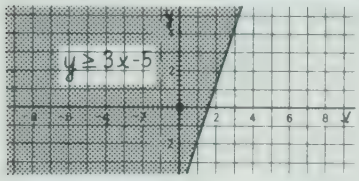
(b)



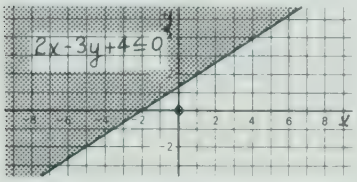
(c)



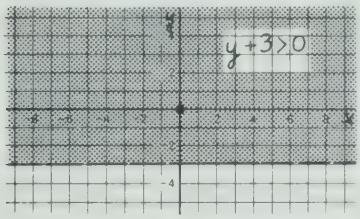
(d)



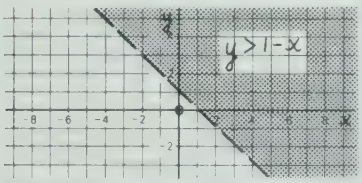
(e)



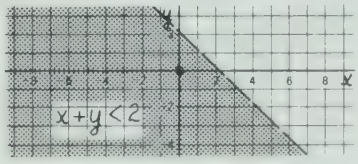
(f)



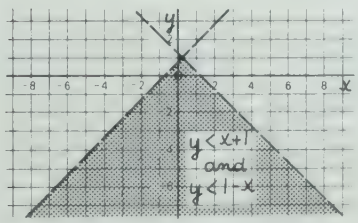
(g)



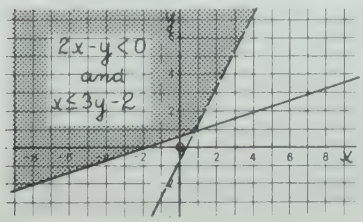
(h)



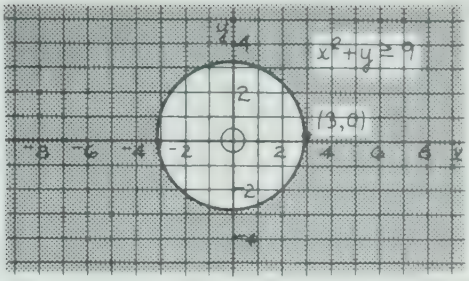
9. (a)



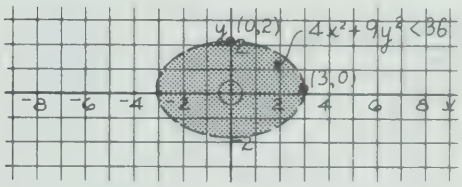
(b)



10. (a)



(b)



GET-SET EXERCISE, PAGE 166

2. (a) $x(x - 3)$
   (b) $(a - 5)(a + 5)$
   (c) $3(m - 3)(m + 3)$
   (d) $(k + 5)(k - 3)$
   (e) $(x - 6)(x - 3)$
   (f) $(b - 16)(b + 3)$

3. (a) Yes (c) No
   (b) Yes (d) Yes

4. (a) $y = -5$ (d) $t = -4$
   (b) $x = -7$ (e) $x = -\frac{7}{5}$ (g) $x = -\frac{13}{2}$
   (c) $a = -35$ (f) $a = -\frac{17}{2}$ (h) $y = -14$

5. (a) $x = 7 - 2y$ (c) $x = 6 - 3y$
   (b) $x = 3y - 4$ (d) $x = \frac{3y + 7}{2}$

6. (a) $y = 3x - 4$ (c) $y = 5 - 3x$
   (b) $y = \frac{x - 5}{2}$ (d) $y = \frac{2x - 7}{2}$

EXERCISE 12.1, PAGE 170

5. (a) $y = 5$ or $y = 1$
   (b) $k = -3$ or $k = -1$
   (c) $m = -9$ or $m = -2$
   (d) $x = 4$ or $x = -2$

6. (a) $x = -5$ or $x = 2$
   (b) $y = \frac{1}{2}$ or $y = -3$
   (c) $m = 5$ or $m = -5$
   (d) $x = -8$ or $x = 7$
   (e) $r = 0$ or $r = 3$
   (f) $w = \frac{-3 \pm \sqrt{5}}{2}$
   (g) $t = -4$ or $t = -1$
   (h) $k = 3$
   (i) $p = -2 \pm \sqrt{11}$
   (j) $x = \frac{1 \pm \sqrt{19}}{3}$

7. (a) $x = -2.23$ or $x = 0.23$
   (b) $m = 1.58$ or $m = 0.42$

8. (a) No real solution
   (b) No real solution

EXERCISE 12.2, PAGE 173

5. (a) $y = 5 - x$
   (b) $y = 2x - 1$
   (c) $y = 2 - 2x$
   (d) $y = 3x + 7$
   (e) $y = x - 8$
   (f) $y = \frac{-3x - 1}{2}$

6. (a)

x	y
1	4
3	2
5	0

(b)

x	y
0	-1
1	1
2	3

(c)

x	y
-1	4
0	2
1	0

(d)

x	y
-2	1
0	7
1	10

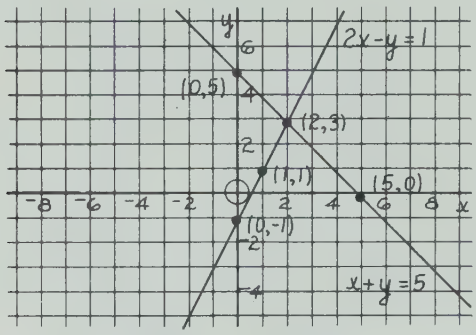
(e)

x	y
0	-8
8	0
6	-2

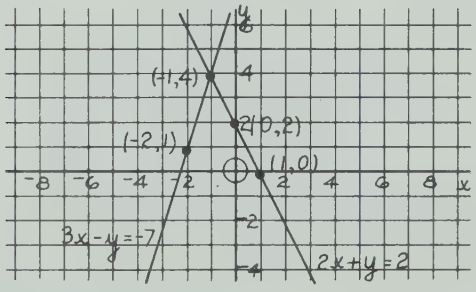
(f)

x	y
-3	4
-1	1
1	-2

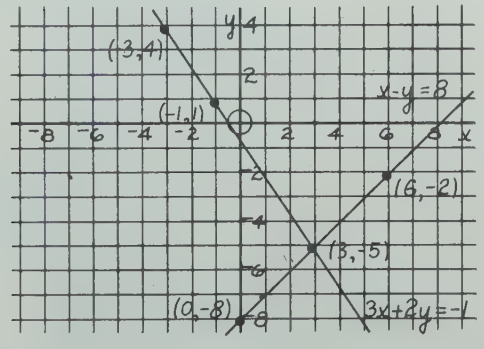
7. (a) (2,3)



(b) (-1,4)



(c) (3,-5)



8. (a) (2,-3)
   (b) (-2,0)
   (c) (2,2)
   (d) (5,-1)
   (e) (1,6)
   (f) (-4,-3)
   (g) (1,-3)
   (h) (7,2)
   (i) (-3,5)
   (j) No solution

9. (a) $(3,\frac{1}{2})$ (b) $(-\frac{1}{2}, \frac{5}{2})$

10. After 2 s

11. 360 tickets

EXERCISE 12.3, PAGE 177

5. (a) (4,0)
   (b) (1,-1)
   (c) (-5,-3)
   (d) $(\frac{1}{2},1)$
   (e) (3.2,1.8)
   (f) (0,0)
   (g) (-3,12)
   (h) $(\frac{2}{3},-\frac{6}{5})$
   (i) No solution
   (j) (1.5,2.8)

6. (a) $x = -1 - y$
   (b) $3(-1 - y) - 2y = -8$
   (c) $y = 1$
   (d) $x = -2$

7. (a) $(x,y) = (1,3)$
   (b) $(x,y) = (-8,1)$
   (c) $(x,y) = (1,-2)$
   (d) $(x,y) = (2,-3)$

8. (a) $y = 5 - 2x$ (b) $x = 4$
   $y = 3x - 15$ (c) $y = -3$

9. (a) $(x,y) = (-2,2)$
   (b) $(x,y) = (4,\frac{1}{2})$
   (c) $(x,y) = (5,3)$
   (d) $(x,y) = (-2,\frac{1}{3})$

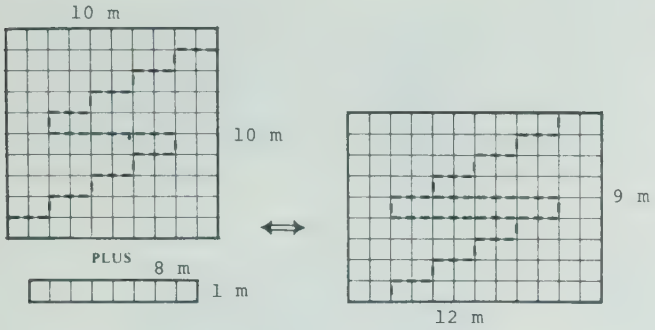
THE MISSING DOLLAR, PAGE 179

Where is it? Right there in front of you, because it was never missing! Imagine the scene happened this way.

Three salesmen pay	\$30 for a room
The manager hands back	5
Total so far	\$25 for the room
The bellboy is tipped	2
Total paid out	\$27

Thus each salesman's share of the \$27, or \$9, includes the money for the room and the bellboy's tip.

THE CUT-UP CAPER



GET-SET EXERCISE, PAGE 182

3. (a) x = 5 (e) x = -8
   (b) x = 11 (f) x = -17
   (c) x = -1 (g) x = 1
   (d) x = -7 (h) x = 6
4. (a) 2 (b) -2 (c) 5
5. (a) 10¢ (d) 125¢
   (b) 95¢ (e) 90¢ (g) 125¢
   (c) 5x¢ (f) 10m¢ (h) (10x + 5y)¢

EXERCISE 13.1, PAGE 184

4. 11,16
5. 7,21
6. 10,12
7. 6
8. 10 golfballs, 24 tees
9. Betty, 5 parts; Billy, 14 parts
10. 96 badminton birds, 47 tennis balls
11. 95 non-perishable, 30 perishable
12. Fiona, 57 sittings; Leslie, 40 sittings

EXERCISE 13.2, PAGE 186

3. 1.7 m, 2.6 m
4. 25 cm by 11 cm
5. 0.6 m by 0.8 m
6. Nora, 36.8 km; Nellie, 30.4 km
7. 27 m by 17 m
8. Sam's skis, 190 cm; Helen's skis, 175 cm
9. Flora, 4.3 min; Phil, 3.7 min
10. Ruth, 2.2 km; Rita, 1.9 km
11. Billy, 1.4 km; Benny, 0.6 km
12. 4 tiles; 10 cm by 10 cm

EXERCISE 13.3, PAGE 189

1. Alphonse, 14 years; Brunhilda, 19 years
2. Peter, 48 kg; Joe, 64 kg
3. Heidi, 1870 kg; trainer, 85 kg
4. Mr. Rightis, 42 years; Artha, 21 years
5. Cougar, 1500 kg; Mustang, 1275 kg
6. Sally, 32 years; Bertie, 24 years
7. Helicopter, 1980 kg; TNT, 180 kg

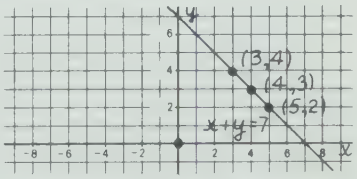
EXERCISE 13.4, PAGE 192

2. (a) 29 $1 bills, 43 $2 bills
   (b) 9 20¢ stamps, 18 10¢ stamps
   (c) 20 singles
3. 13 quarters, 9 dimes
4. 23 floor shots, 17 free throws
5. 13 $2 bills, 19 $10 bills
6. 33 full-size cars, 27 compacts
7. 120 nuts, 100 bolts
8. 2500 boxes mints, 3250 boxes almonds
9. 33 000 $5 tickets, 17 000 $3.50 tickets
10. $3.25/record, $4.75/tape
11. 288 cassettes, 163 stereo tapes

MBS EXERCISE 3, PAGE 194

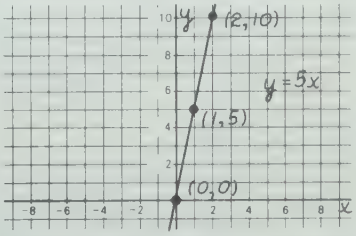
1. (a)

x	y
3	4
5	2
4	3



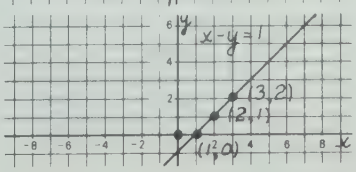
(b)

x	y
1	5
0	0
2	10

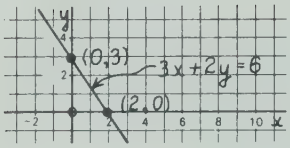


(c)

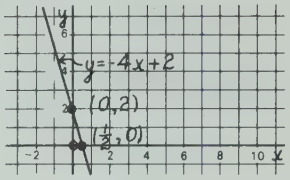
x	y
3	2
2	1
1	0



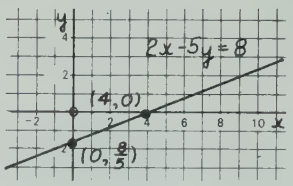
2. (a) 2,3



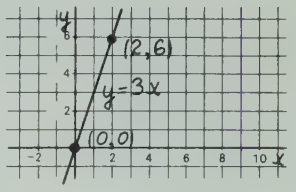
(b) $\frac{1}{2}$,2



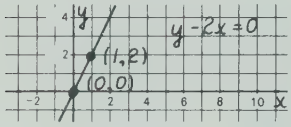
(c) $4,-\frac{8}{5}$



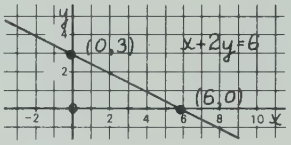
(d) 0,0



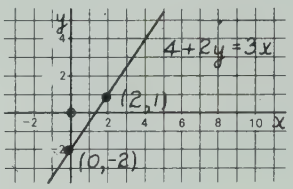
3. (a) y = 2x; 2,0



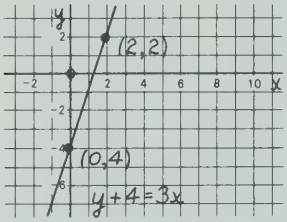
(c) $y = -\frac{1}{2}x + 3$; $-\frac{1}{2}$,3



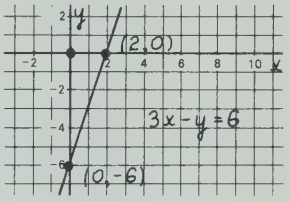
(e) $y = \frac{3}{2}x - 2$; $\frac{3}{2}$,-2



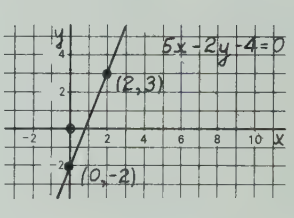
(b) y = 3x - 4; 3,-4



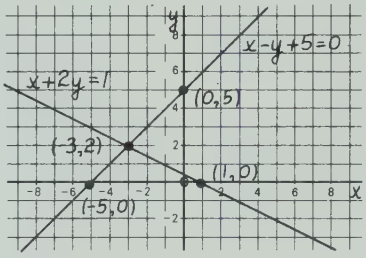
(d) y = 3x - 6; 3,6



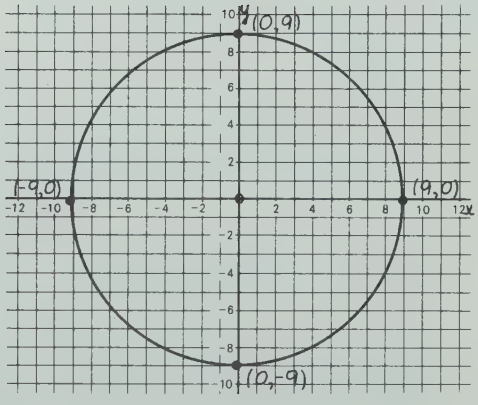
(f) $y = \frac{5}{2}x - 2$; $\frac{5}{2}$,-2



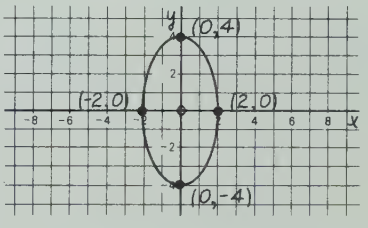
4. Intersection is (-3,2).



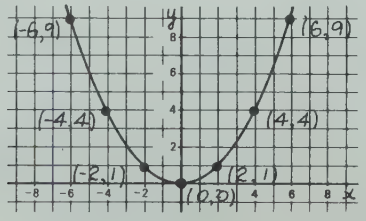
5. (a) Circle $x^2 + y^2 = 81$



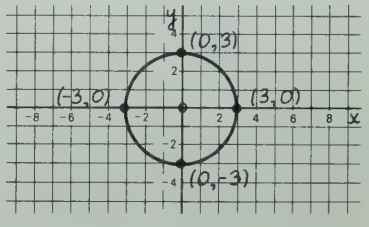
(c) Ellipse $4x^2 + y^2 = 16$



(b) Parabola $y = \frac{1}{4}x^2$

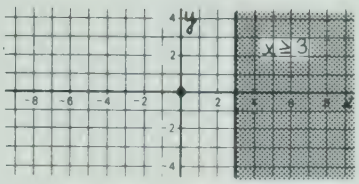


(d) Circle $3x^2 + 3y^2 = 27$

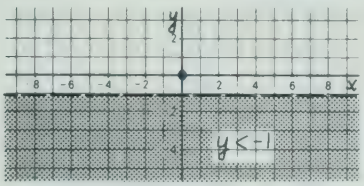


6. (a) $x = 2$ (b) $y \geq 1$ (c) $x + y > 1$

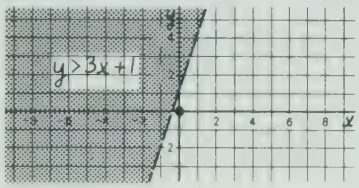
7. (a)



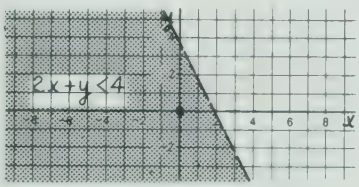
(b)



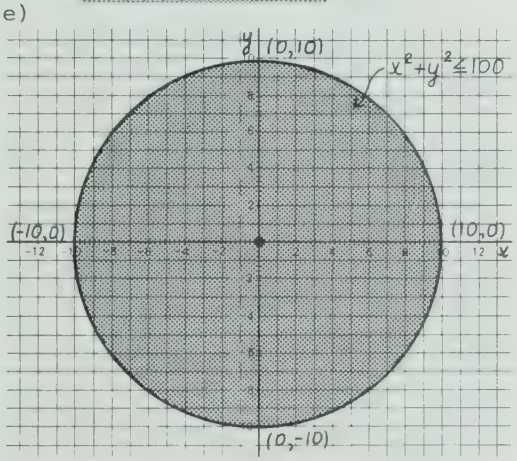
(c)



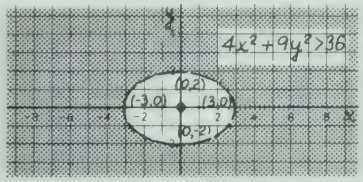
(d)



(e)



(f)



8. (a) $x = 4$ or $x = -4$
   (b) $x = 0$ or $x = -5$
   (c) $m = 7$ or $m = -4$
   (d) $y = \frac{3 \pm \sqrt{13}}{2}$
   (e) $k = \frac{-2 \pm \sqrt{7}}{3}$
   (f) $x = -\frac{2}{3}$ or $x = \frac{1}{2}$

9. (a) $a = 7$ (c) $t = 5$
   (b) $y = -\frac{20}{3}$ (d) $w = 91$

10. (a) No (b) Yes

11. (a) $(x,y) = (1,3)$
    (b) $(x,y) = (3,1)$
    (c) $(m,n) = (\frac{14}{5}, -\frac{3}{5})$
    (d) $(x,y) = (\frac{2}{5}, -1)$

12. 34 tins beans, 48 tins fruit

13. Ralph played 16 hours; Hattie played 20 hours.

14. 84 years

GET-SET EXERCISE, PAGE 197

1. (a) 2:3 (c) 9:2 (e) 7:6
   (b) $\frac{3}{2}$ (d) 1:3 (f) $\frac{4}{1}$

2. (a) Yes (c) Yes (e) Yes
   (b) No (d) No (f) Yes

4. (a) $\frac{2}{3}$ (c) Impossible
   (b) $\frac{22}{3}$ (d) $\frac{4}{7}$

5. (a) 18 (c) 6 (e) 9
   (b) 28,15 (d) 8,10 (f) 3,12

7. (a) 2:5 (d) 5:4
   (b) 1:10 (e) 1:1:10
   (c) 5:1

8. (a) 10:15:12 (b) Ms. Jones

9. 1:20

10. 7:4, 4:7

11. (a) 5:6:9 (b) 9:12:20

12. (a) $r = 30$ (c) $r = 9$, $s = 35$
    (b) $p = 80$, $q = 60$ (d) $x = 84$, $y = 60$, $z = 360$

13. 1:6:12

14. 7:2

15. (a) 5:2 (b) 5:2 (c) 25:4

16. 4:3, 4:3, 4:3, 16:9

17. 5:9

EXERCISE 14.1, PAGE 201

3. (a) $r = 9$
   (b) $m = 14$
   (c) $x = 13$
   (d) $y = 7$
   (e) $q = 12$ or -12
   (f) $t = \frac{35}{2}$
   (g) $n = 104$
   (h) $a = 14$, $b = 55$
   (i) $w = \frac{10}{3}$, $z = \frac{15}{2}$
   (j) $k = 42$, $y = 24$
   (k) $x = \frac{45}{11}$, $y = \frac{900}{11}$
   (l) $p = 6\sqrt{2}$ or $-6\sqrt{2}$
4. 60 cm
5. 35 m^2
6. 90 cm^3
7. 31.1 cm

EXERCISE 14.2, PAGE 204

2. 59.7 cm
3. \$481
4. 124 V
5. 96 N
6. 140 kPa
7. 58.1 m
8. 82 500 W

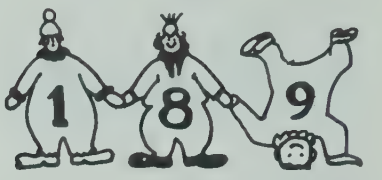
EXERCISE 14.3, PAGE 206

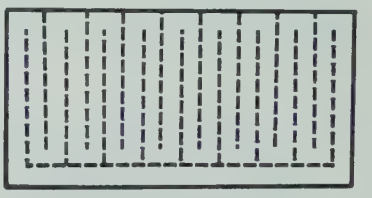
4. 16 min
5. 30 cm
6. (a) 800 r/min (b) 4.5 cm
7. (a) 27 teeth (b) 200 r/min
8. \$1065
9. (a) 1120 Ω (b) 1.8 A
10. 56 kPa
11. 393.75 km/h

EXERCISE 14.4, PAGE 209

3. \$29.65
4. \$241, \$233.50, \$259
5. \$10
6. \$1399.50
7. y increases from -1 to 14.
8. (a) C = \$2.50 + \$0.05n
   (b) \$4.50, \$6.25, \$8.20
   (c) 11.25¢/card, 8.3̇¢/card, 7.2¢/card
9. (a) \$686.75 (b) \$2.52/article
10. (a) 4°C
    (b) 58.008 398 m
    (c) 2.8652 cm

PUZZLERS, PAGE 211

1. 46,18
2. \$1.20 (3 cuts and 3 welds)
3. 

4. 4 cents, 2 dimes, 1 quarter, 1 half-dollar, 1 dollar or \$1.99
5. $\frac{1\not{0}}{\not{0}4} = \frac{1}{4}$, $\frac{1\not{0}}{\not{0}5} = \frac{1}{5}$, $\frac{4\not{0}}{\not{0}8} = \frac{4}{8} = \frac{1}{2}$
6. -50
7. $1 + 2 + 3 + 4 + 5(7 + 8) + 9 + 6$
8. 3 kg
9. 

EXERCISE 15.1, PAGE 216

5. 45°; 75°, 65°, 40°
12. 17.5 m

EXERCISE 15.2, PAGE 219

1. (a) 35 (c) 15.81
   (b) 41 (d) 6.93
2. 10 m
3. 10.3 m
4. 12.1 km

EXERCISE 16.2, PAGE 229

5. (a) $x = 90$, $y = 20$, $z = 20$
   (b) $x = 30$, $y = 60$
   (c) $x = 82$, $y = 82$, $z = 98$
   (d) $x = 20$, $y = 20$
12. (a) $x = 27$, $y = 22.5$
    (b) $a = 90$, $f = 30$, $k = 60$, $n = 60$, $r = 30$, $t = 60$

EXERCISE 16.3, PAGE 232

4. (a) $x = 30$, $y = 30$
   (b) $x = 40$, $y = 70$, $z = 70$
   (c) $x = 50$, $y = 90$, $z = 50$
   (d) $x = 85$, $y = 25$, $m = 60$

7. 0.8 m

8. 4.92 cm

9. (a) $x = 90$, $y = 60$, $z = 60$
   (b) $x = 24$, $y = 10$, $z = 11.1$
   (c) $v = 72$, $w = 54$, $x = 69$,
   $y = 69$, $z = 69$
   (d) $w = 60$, $x = 80$, $y = 80$, $z = 20$

EXERCISE 18.1, PAGE 249

5. (a) $\sin B = \frac{\sqrt{3}}{2}$, $\cos B = \frac{1}{2}$, $\tan B = \sqrt{3}$

   (b) $\sin M = \frac{8}{17}$, $\cos M = \frac{15}{17}$, $\tan M = \frac{8}{15}$

   (c) $\sin X = \frac{3}{5}$, $\cos X = \frac{4}{5}$, $\tan X = \frac{3}{4}$

   (d) $\sin R = \frac{8}{\sqrt{89}}$, $\cos R = \frac{5}{\sqrt{89}}$, $\tan R = \frac{8}{5}$

   (e) $\sin E = \frac{12}{13}$, $\cos E = \frac{5}{13}$, $\tan E = \frac{12}{5}$

   (f) $\sin T = \frac{7}{25}$, $\cos T = \frac{24}{25}$, $\tan T = \frac{7}{24}$

6. (a) $\sin B = \frac{\sqrt{3}}{2}$, $\cos B = \frac{1}{2}$, $\tan B = \sqrt{3}$

   $\sin C = \frac{1}{2}$, $\cos C = \frac{\sqrt{3}}{2}$, $\tan C = \frac{1}{\sqrt{3}}$

   (b) $\sin T = \frac{5}{13}$, $\cos T = \frac{12}{13}$, $\tan T = \frac{5}{12}$

   $\sin S = \frac{12}{13}$, $\cos S = \frac{5}{13}$, $\tan S = \frac{12}{5}$

   (c) $\sin K = \frac{4}{5}$, $\cos K = \frac{3}{5}$, $\tan K = \frac{4}{3}$

   $\sin M = \frac{3}{5}$, $\cos M = \frac{4}{5}$, $\tan M = \frac{3}{4}$

   (d) $\sin X = \frac{1}{\sqrt{5}}$, $\cos X = \frac{2}{\sqrt{5}}$, $\tan X = \frac{1}{2}$

   $\sin Y = \frac{2}{\sqrt{5}}$, $\cos Y = \frac{1}{\sqrt{5}}$, $\tan Y = 2$

   (e) $\sin Q = \frac{15}{17}$, $\cos Q = \frac{8}{17}$, $\tan Q = \frac{15}{8}$

   $\sin R = \frac{8}{17}$, $\cos R = \frac{15}{17}$, $\tan R = \frac{8}{15}$

   (f) $\sin D = \frac{4}{5}$, $\cos D = \frac{3}{5}$, $\tan D = \frac{4}{3}$

   $\sin F = \frac{3}{5}$, $\cos F = \frac{4}{5}$, $\tan F = \frac{3}{4}$

7. $\sin P = \frac{3}{\sqrt{13}}$, $\cos P = \frac{2}{\sqrt{13}}$

8. $\sin \angle XYW = \frac{5}{13}$, $\sin \angle WYZ = \frac{12}{13}$

9. (a) $\frac{3}{5}$, $\frac{4}{5}$, 1

   (b) $\frac{1}{2}$, $\frac{\sqrt{3}}{2}$, 1 (c) $\frac{5}{13}$, $\frac{12}{13}$, 1

EXERCISE 18.2, PAGE 253

5. (a) 5.671 (d) 0.755 (g) 0.982
   (b) 0.259 (e) 0.649 (h) 0.999
   (c) 0.213 (f) 0.629 (i) 0.276

6. (a) 63° (c) 61° (e) 34°
   (b) 77° (d) 6° (f) 35°

7. (a) 1 (c) $\frac{\sqrt{3}}{2}$ (e) 1
   (b) 0 (d) 1 (f) 1

EXERCISE 18.3, PAGE 258

3. (a) $\angle A = 60^\circ$, $\angle C = 30^\circ$
   (b) $\angle D = 49^\circ$, $\angle E = 41^\circ$
   (c) $\angle K = 29^\circ$, $\angle H = 61^\circ$

4. (a) PT = 7.82 TA = 18.4
   (b) SC = 21.1 CT = 28.0
   (c) WS = 33.1 WA = 25.9

5. (a) JA = 10.5 JR = 18.3
   (b) NU = 28.0 FU = 21.5
   (c) LA = 40.1 AE = 24.1

6. (a) $\angle A = 62^\circ$, $c = 5.63$, $a = 10.6$
   (b) $o = 31$, $\angle D = 39^\circ$, $\angle O = 51^\circ$
   (c) $x = 9$, $\angle X = 37^\circ$, $\angle Y = 53^\circ$
   (d) $\angle S = 27^\circ$, $s = 5.1$, $r = 11.2$
   (e) $\angle L = 39^\circ$, $k = 19.8$, $m = 25.4$
   (f) $q = 21.6$, $\angle R = 34^\circ$, $\angle P = 56^\circ$

7. 86.6 m

8. 41 km

9. 77 cm

10. 17°

11. 37°

12. 29 cm, 20 cm

13. 10.7 m

14. 1639 m

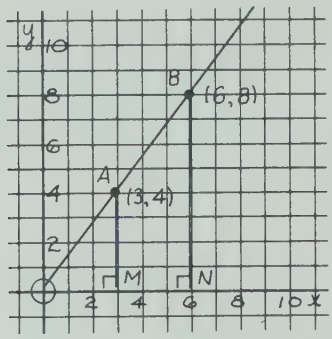
15. (a) 37° (b) 250 m

EXERCISE 19.1, PAGE 265

5. (a) 72° (d) 180°
   (b) 90° (e) 153° (g) 202°
   (c) 288° (f) 270° (h) 153°

7. (a) 45° (c) 225°
   (b) 135° (d) 315°

8. (a)



   (b) A and B lie on the same straight line.
   (c) ΔOAM and ΔOBN are similar.

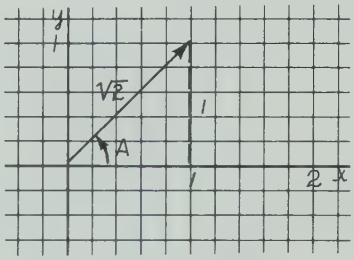
EXERCISE 19.2, PAGE 268

5. (a) 10 (d) $5\sqrt{2}$
   (b) $\sqrt{13}$ (e) 13 (g) 5
   (c) 17 (f) $2\sqrt{10}$ (h) 2

6. (a) $\sin A = \frac{1}{\sqrt{2}}$

   $\cos A = \frac{1}{\sqrt{2}}$

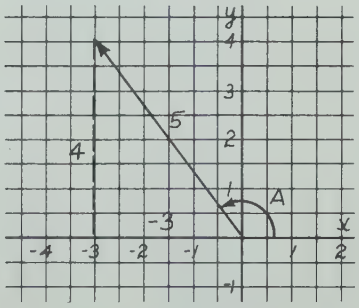
   $\tan A = 1$



   (b) $\sin A = \frac{4}{5}$

   $\cos A = -\frac{3}{5}$

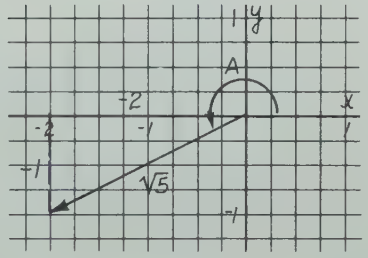
   $\tan A = -\frac{4}{3}$



   (c) $\sin A = -\frac{1}{\sqrt{5}}$

   $\cos A = -\frac{2}{\sqrt{5}}$

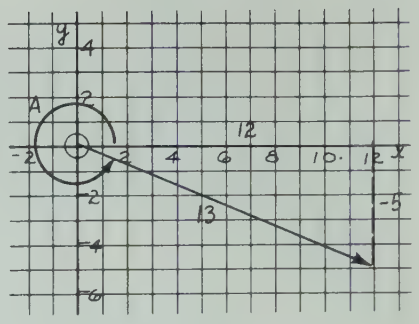
   $\tan A = \frac{1}{2}$



   (d) $\sin A = -\frac{5}{13}$

   $\cos A = \frac{12}{13}$

   $\tan A = -\frac{5}{12}$



7. (a) 1,0 does not exist
   (b) $\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}, -1$
   (c) 0,-1,0
   (d) $-\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}, 1$
   (e) $-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, -1$
   (f) 0,1,0

MBS EXERCISE 4, PAGE 270

1. (a) $\frac{5}{3}$ (c) $\frac{3}{2}$ (e) $\frac{2}{3}$
   (b) $\frac{9}{4}$ (d) $\frac{8}{1}$ (f) $\frac{8}{5}$

2. (a) No (c) Yes
   (b) Yes (d) Yes

3. (a) m = 15, n = 27
   (b) p = 75, q = 1

4. 12 or -12

5. (a) x = 60
   (b) a = 65, b = 50
   (c) y = 37
   (d) k = 48
   (e) z = 100
   (f) m = 35

6. (a) x = 13 (d) q = 9
   (b) p = 14.7 (e) z = 30
   (c) y = 15 (f) r = 7

7. (a) x = 120, y = 60
   (b) z = 145
   (c) k = 130

8. (a) $\frac{4}{5}, -\frac{3}{5}, -\frac{4}{3}$
   (b) -1,0 doesn't exist
   (c) $-\frac{3}{5}, -\frac{4}{5}, \frac{3}{4}$

9. (a) $\sin L = \frac{5}{13}$ $\sin M = \frac{12}{13}$

$\cos L = \frac{12}{13}$ $\cos M = \frac{5}{13}$

$\tan L = \frac{5}{12}$ $\tan M = \frac{12}{5}$

(b) $\sin D = \frac{15}{17}$ $\sin R = \frac{8}{17}$

$\cos D = \frac{8}{17}$ $\cos R = \frac{15}{17}$

$\tan D = \frac{15}{8}$ $\tan R = \frac{8}{15}$

(c) $\sin T = \frac{1}{\sqrt{2}}$ $\sin N = \frac{1}{\sqrt{2}}$

$\cos T = \frac{1}{\sqrt{2}}$ $\cos N = \frac{1}{\sqrt{2}}$

$\tan T = 1$ $\tan N = 1$

10. (a) 0.530 (b) 0.375 (c) 3.271

11. (a) $A = 82^\circ$ (c) $C = 75^\circ$
(b) $B = 14^\circ$ (d) $D = 32^\circ$

12. (a) XZ = 17.7
XY = 9.38
(b) BC = 19.5 (c) LD = 40.5
AC = 35.8 LT = 60.5

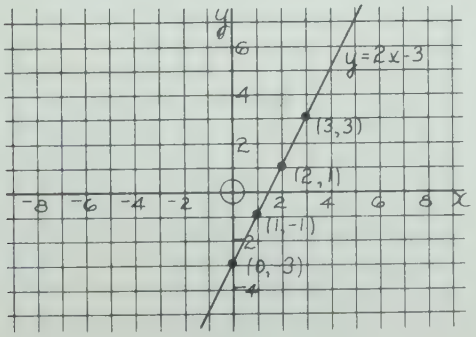
13. (a) $\angle B = 20^\circ$
(b) $\angle R = 50^\circ$ (c) $\angle E = 37^\circ$
$\angle T = 40^\circ$ $\angle B = 53^\circ$

REVIEW EXERCISE, PAGE 277

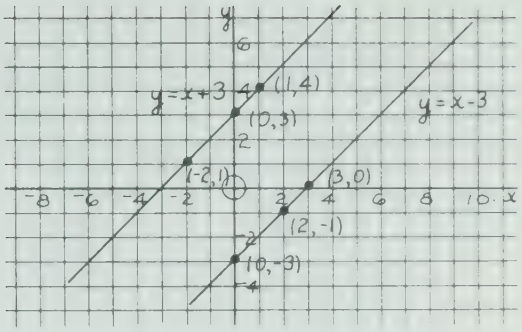
1. set of ordered pairs, graph, equation, statement, table of values

2. (a) {(0,1), (1,3), (-2,-3), (4,9), ...}
(b) {(2,4), (0,6), (-1,7), (-3,9), ...}
(c) {(-2,-1), (0,1), (1,2), (-1,0), ...}
(d) {(50,1), (150,3), (200,4), (500,10), ...}

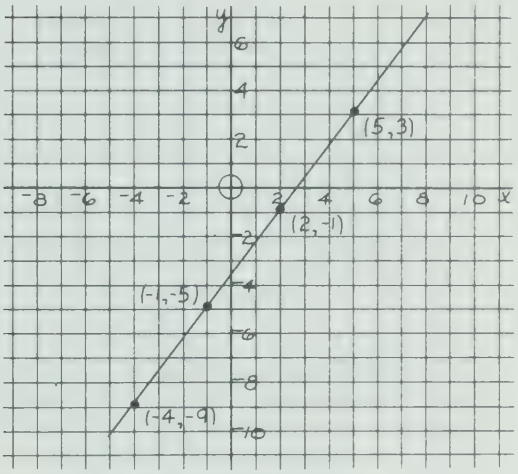
3. (a)



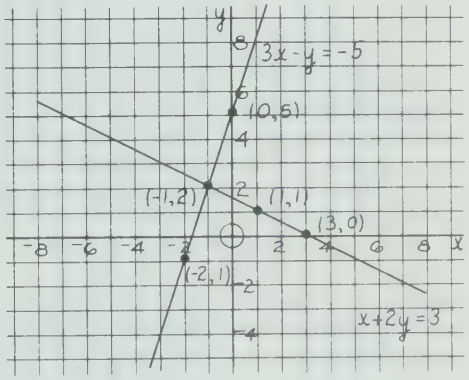
(b)



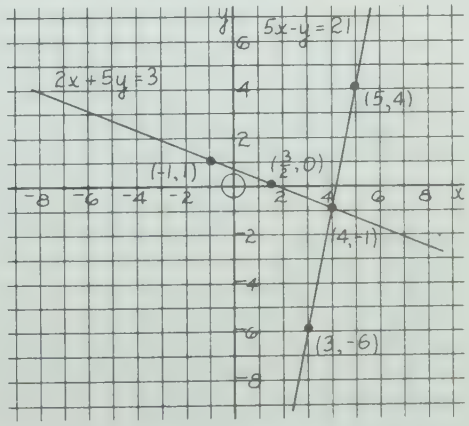
(c)



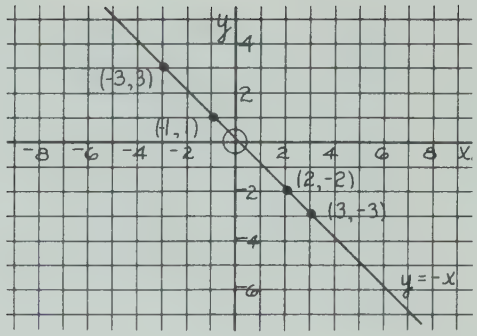
4. (a) (-1,2)



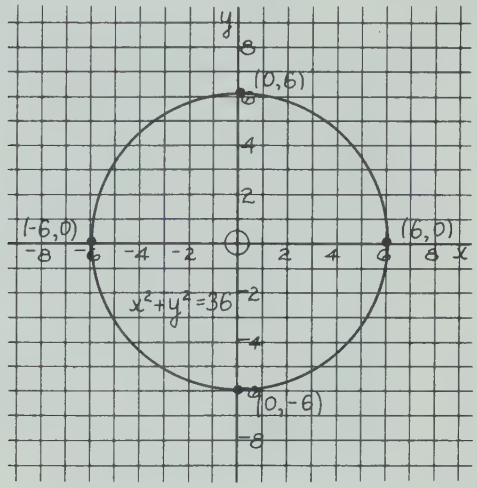
(b) (4,-1)



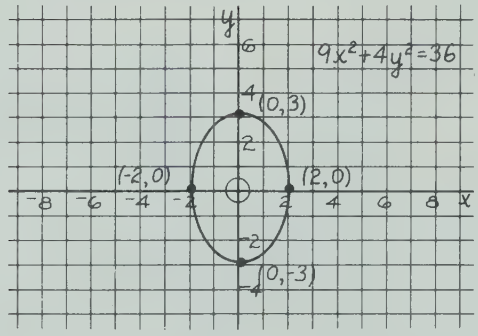
5. (a)



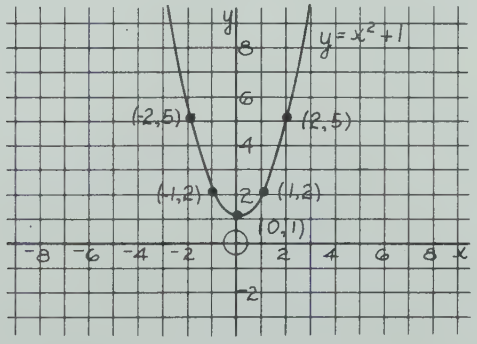
(b)



(c)



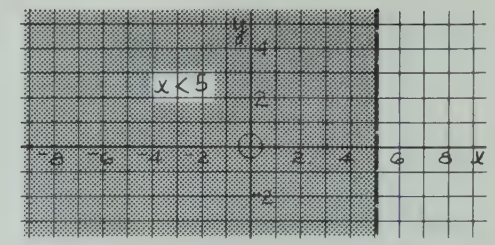
(d)



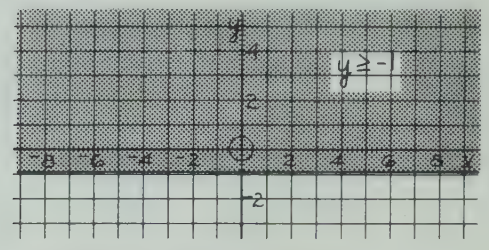
6. (a) (3,0)(0,-2)
   (b) (-1,0)(0,1)
   (c) (3,0)(-3,0)(0,-9)
   (d) (5,0)(-5,0)(0,5)(0,-5)

7. (a) x = 3
   (b) y = -4
   (c) x + 3y = 1

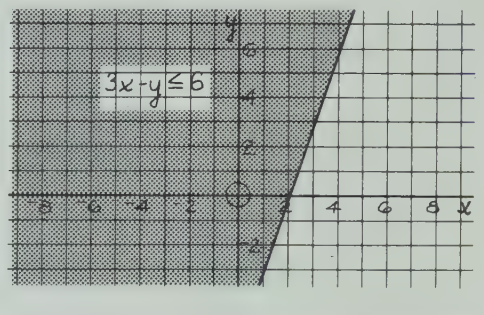
8. (a)



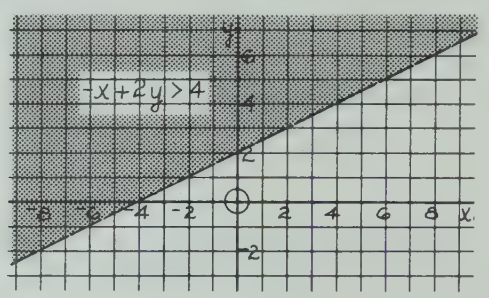
(b)



(c)



(d)



9. (a) $y = -\frac{1}{3}x + \frac{5}{3}$; $-\frac{1}{3}$, $\frac{5}{3}$
   (b) y = x + 3; 1, 3
   (c) y = -2x + 7; -2, 7
   (d) $y = \frac{1}{3}x - \frac{7}{3}$; $\frac{1}{3}$, $-\frac{7}{3}$

10. (a) (3,1) (b) (-5,0) (c) (1,-2)

11. 3 s

12. (a) (5,-2) (c) (2,3)
    (b) (2,7) (d) $(0,-\frac{1}{4})$

13. (a) x = 0 or x = -3
    (b) x = -7 or x = 5
    (c) $x = \frac{-3 \pm \sqrt{17}}{2}$
    (d) $x = \frac{1 \pm \sqrt{3}}{2}$

14. 10 cm by 13 cm

15. 7, 10

16. 8 units, 15 units, 17 units

17. 17 tarts, 14 cookies

18. 23 kg iron, 19 kg nickel

19. Dee, 16 years; Jack, 11 years

20. 19 kg

21. 38 dimes

22. 13 10¢ stamps, 38 25¢ stamps

23. (a) 9:5 (c) 27:16
    (b) 3:2 (d) 27:10

24. (a) 28 (b) 6.6

25. ±12

26. (a) x = 10, y = 15.2
    (b) m = 1, n = 4

27. 2826 cm^2

28. 350 r/min

29. \$261, \$251, \$273, \$298.20

30. 35; 65°, 70°, 45°

32. (a) a = 130, b = 50
    (b) x = 90
    (c) m = 35
    (d) t = 120
    (e) g = 90, h = 80
    (f) k = 40

34. (a) $\sin A = -\frac{3}{\sqrt{34}}$ (b) $\sin A = \frac{2}{\sqrt{13}}$

    $\cos A = -\frac{5}{\sqrt{34}}$ $\cos A = \frac{3}{\sqrt{13}}$

    $\tan A = \frac{3}{5}$ $\tan A = \frac{2}{3}$

35. (a) $\sin 60^\circ = \frac{\sqrt{3}}{2}$ (c) $\tan 180^\circ = 0$

    (b) $\cos 90^\circ = 0$ (d) $\sin 225^\circ = -\frac{1}{\sqrt{2}}$

36. (a) 1 (c) 0
    (b) $\frac{\sqrt{3}}{2}$ (d) 1

37. (a) $\angle D = 35^\circ$
    $\angle T = 55^\circ$
    ED = 33
    (b) $\angle M = 19^\circ$ (c) $\angle J = 58^\circ$
    SM = 35 JM = 11
    AM = 37 IM = 17

38. 52 m

39. 72°

40. 3565 m

41. 93 m

EXERCISE 20.1, PAGE 290

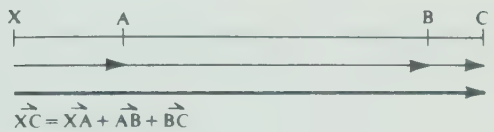
8. 90 m/s, 390 m/s, 720 m/s

9. (a) 60 N (c) 116 N
   (b) 100 N (d) 24 N

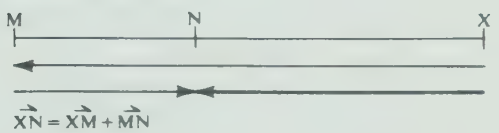
11. $17\frac{1}{3}$ min

EXERCISE 20.2, PAGE 295

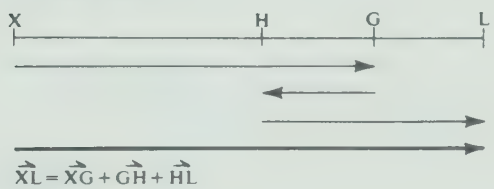
6. (a)



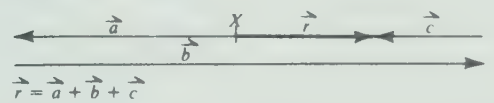
(b)



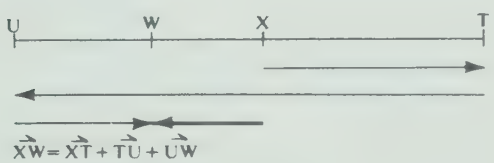
(c)



(d)



(e)



(f)

EXERCISE 20.3, PAGE 297

5. $\vec{p} = \frac{1}{2}\vec{n}$ $\vec{t} = 2\frac{1}{2}\vec{n}$ $\vec{w} = -3\vec{n}$

   $\vec{q} = -1\frac{1}{2}\vec{n}$ $\vec{u} = -\frac{1}{2}\vec{n}$ $\vec{x} = 3\vec{n}$

   $\vec{r} = -\vec{n}$ $\vec{v} = 1\frac{1}{2}\vec{n}$ $\vec{y} = -2\frac{1}{2}\vec{n}$

   $\vec{s} = 2\vec{n}$

6. $\vec{b} = -\vec{a}$ $\vec{f} = -1\frac{1}{3}\vec{a}$ $\vec{m} = \frac{2}{3}\vec{a}$

$\vec{c} = 1\frac{1}{3}\vec{a}$ $\vec{g} = -\frac{1}{3}\vec{a}$ $\vec{n} = \vec{a}$

$\vec{d} = 2\vec{a}$ $\vec{h} = 3\vec{a}$ $\vec{p} = -\frac{2}{3}\vec{a}$

$\vec{e} = -2\frac{2}{3}\vec{a}$ $\vec{k} = -\frac{2}{3}\vec{a}$

7. (a) $\vec{t} = \vec{a} + (-\vec{b}) + \vec{c}$
(b) $\vec{t} = \vec{m} + (-\vec{n}) + \vec{r} + (-\vec{s})$
(c) $\vec{t} = \vec{x} + \vec{y} + (-\vec{z})$

EXERCISE 21.1, PAGE 307

8. (a) $\overrightarrow{RS} = \vec{a}$ (d) $\overrightarrow{QT} = \frac{1}{2}(\vec{a} + \vec{b})$
(b) $\overrightarrow{PS} = \vec{b}$ (e) $\overrightarrow{PR} = \vec{b} - \vec{a}$
(c) $\overrightarrow{QS} = \vec{a} + \vec{b}$

9. (a) 23.2 N at 18° to the 15 N force
(b) 14.1 N at 45° to either force
(c) 37 N at 31° to the 25 N force
(d) 18 N at 46° to the 20 N force

10. 382 km/h at 10° to the heading of the aircraft

11. 16.8 knots in a direction 57° west of north

12. 97 N, 12°

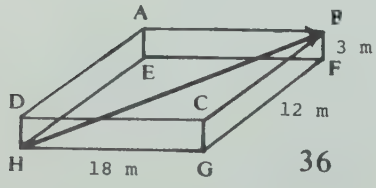
EXERCISE 21.2, PAGE 311

6. (a) $\overrightarrow{FC}$ (c) $\overrightarrow{FH}$ (e) $\vec{0}$
(b) $\overrightarrow{EB}$ (d) $\overrightarrow{GA}$ (f) $\overrightarrow{DA}$

7. 5 km S53°W

8. 60.8 km N9°W

9. Direction of move = $\overrightarrow{HB}$
$\overrightarrow{HB}$ = 21.8 m



EXERCISE 22.1, PAGE 316

4. (a) 12 km, 50°, 230°
(b) 38 km, 275°, 95°
(c) 21 km, 210°, 30°
(d) 24 km, 340°, 160°

5. 120 km, 66°

6. 424 m, 315°

7. 40°

8. (a) 339° (b) About 4 h

9. About 77 km

10. (a) 83° (b) About 22 15

EXERCISE 22.2, PAGE 321

4. 58 N, 31°

5. 490 km/h, bearing 66°

6. 35 N at 22° to the 25 N force

7. (a) 44 N at 156° to the 30 N force
(b) 123 N at 100° to the 50 N force
(c) 78 N at 157° to the 50 N force

8. 49 N at 159° to the 35 N force

9. 54 km/h, bearing 339°

10. 470 N, 16°

EXERCISE 23.1, PAGE 328

5. (a) \$132 (d) \$55
(b) \$37 (e) \$90 (g) \$160
(c) \$125 (f) \$45 (h) \$223

6. (a) \$12.54 (c) \$47.43 (e) \$34
(b) \$175.13 (d) \$40 (f) \$65.40

7. \$66.24

8. \$15

9. \$90

10. (a) \$18 000 (d) \$25 000
(b) \$31 500 (e) \$24 000
(c) \$39 000

11. \$933.33

12. (a) \$36 000
(b) \$41 (c) \$7111.11

EXERCISE 23.2, PAGE 335

10. (a) \$42 (d) \$324.60
(b) \$313.05 (e) \$699.20
(c) \$1056.15

11. (a) \$192.02 (d) \$157.56
    (b) \$243.15 (e) \$26.19
    (c) \$3.39

12. \$80

13. \$145.50

14. (a) \$1623 (b) \$20 000 (c) \$18 377

15. (a) \$15 (c) \$2475
    (b) \$5400 (d) 13 years, 4 months

16. \$7566

17. (a) \$1599 (b) \$6444 (c) \$7004.80

18. The limited-payment policy is more expensive by \$1215.20.

EXERCISE 24.1, PAGE 343

4. \$240

5. \$22, 25%

6. $7\frac{1}{2}\%$

7. Purchase and save 30¢.

8. \$25

9. No, she saved 3¢.

10. Borrow now and save \$2.10.

EXERCISE 24.2, PAGE 346

4. (a) \$880 (b) \$882

5. \$415.84

6. \$20.39

7. \$106.12 (3 interest periods)

8. \$573.14

9.

Year	Amount
1	\$1272.00
2	1348.32
3	1429.22
4	1514.97

EXERCISE 24.3, PAGE 349

4. \$1500

5. (a) \$6
   (b) \$15
   (c) ¼ year (3 months)
   (d) $\frac{1}{3}$ year (4 months)
   (e) \$125
   (f) 7%
   (g) \$80
   (h) 9%
   (i) \$140
   (j) 12%

6. \$626.40

7. August 28

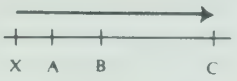
MBS EXERCISE 5, PAGE 350

1. (a) $\vec{a}$, $\overrightarrow{AB}$, $-\overrightarrow{BA}$
   (b) $\vec{m}$, $\overrightarrow{MN}$, $-\overrightarrow{NM}$
   (c) $\vec{p}$, $\overrightarrow{PQ}$, $-\overrightarrow{QP}$
   (d) $\vec{r}$, $\overrightarrow{RS}$, $-\overrightarrow{SR}$

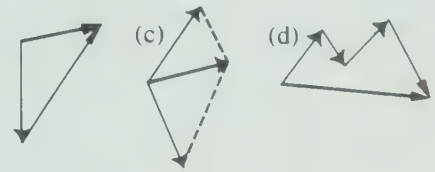
2. (a) 30 N (c) 40 N
   (b) 35 N (d) 52 N

3. $\vec{b} = 1.5\,\vec{a}$ $\vec{e} = 0.6\,\vec{a}$
   $\vec{c} = -1.4\vec{a}$ $\vec{f} = -1.8\,\vec{a}$
   $\vec{d} = -2.5\,\vec{a}$ $\vec{g} = 5.1\,\vec{a}$

4. (a)



(b) (c) (d)



5. (a) 133°, 313°
   (b) 220°, 40°
   (c) 328°, 148°

6. (a) \$18.36 (b) \$85.86 (c) \$32.40

7. \$2750

8. (a) \$125, \$8250
   (b) \$558.22, \$18 421.26
   (c) \$1207.44, \$24 148.80

9.

	Percent	Decimal	Fraction
(a)	80%	0.8	$\frac{4}{5}$
(b)	87.5%	0.875	$\frac{7}{8}$
(c)	95%	0.95	$\frac{19}{20}$
(d)	135%	1.35	$1\frac{7}{20}$
(e)	$16\frac{2}{3}\%$	$0.1\dot{6}$	$\frac{1}{6}$

10.

Problem	(a)	(b)	(c)	(d)	(e)
Interest	$3.60	$2.50	$6.40	$5.67	$42
Principal	$180	$200	$480	$600	$1260
Rate	6%	5%	8%	7.5%	8%
Time	4 months	3 months	2 months	46 days	5 months

11. $1536

EXERCISE 25.1, PAGE 356

4. $3850, $3080, $2310, $1815, $1430
5. 3-year-old car
6. (a) $122.92, 6.4¢
   (b) $79.42, 6.8¢
   (c) $215.33 , 8.6¢
   (d) $70.42, 5.6¢
7. (a) $65 (b) 13.7¢
8. $8600

EXERCISE 25.2, PAGE 362

6. (a) $154 (c) $247
   (b) $286 (d) $529
7. (a) $104.20 (c) $364.75
   (b) $195 (d) $153
8. $154
9. Teresa pays $133 more.
10. $50
11. (a) $457.25
    (b) (i) $2090
        (ii) $50
12. $523
13. $383.76
14. $102

EXERCISE 25.3, PAGE 366

3. $880
4. $135
5. 8½%
6. $15.53/100 km

MORE NUTTY MATH, PAGE 367

1. Certainly! (But they don't celebrate it!)
2. He's still alive.
3. 1 each year.
4. Match.
5. All!
6. 1 hour.
7. White.
8. Halfway. Or until he reaches the first tree.
9. 10 including the batter. 6 outs.
10. 5¢ piece and 50¢ piece. (The 50¢ piece is not a nickel.)
11. 9
12. None! It was Noah's ark!
13. They didn't play each other!
14. 2 apples!
15. No; because Christ hadn't been born yet!
16. The beggar is the woman's sister.
17. Apitude should be Aptitude.

EXERCISE 26.1, PAGE 373

7. (a) $352.80 (b) $360

8. $23.09

9. $20.83

10. (a) $67.50 (d) $1800
    (b) $184.45 (e) $102.38
    (c) $1373.04 (f) $259.20

11. (a) 14.5% (b) 59.5% (c) 43.48%

12. (a) $80 (b) 16\frac{2}{3}$%

13. $15

EXERCISE 26.2, PAGE 377

5. (a) $5 (c) $3
    (b) 50 weeks (d) 18 months

6. 20.6%

7. 27.3%

8. 28.1%

9. $32.40

EXERCISE 26.3, PAGE 381

3. (a) 12% (b) 18%

4. $81.28

EXERCISE 27.1, PAGE 388

7. (a) 33 (d) 93
    (b) 63 (e) 156
    (c) 95

8. (a) $197.74 (d) $774.52
    (b) $146.76 (e) $454.36
    (c) $967.47

9. (a) $531.78 (b) 13.4%

10. 13.75%

11. $9.14

12. $21.76

EXERCISE 27.2, PAGE 392

4. (a)

Date	Calculation of Interest	Payments: Interest	Payments: Principal	Balance Owing
Apr. 1				$1500
Apr. 30	$1500 \times \frac{2}{300}$	$10.00	$250	1250
May 31	$1250 \times \frac{2}{300}$	8.33	250	1000
June 30	$1000 \times \frac{2}{300}$	6.67	250	750
July 31	$750 \times \frac{2}{300}$	5.00	250	500
Aug. 31	$500 \times \frac{2}{300}$	3.33	250	250
Sept. 30	$250 \times \frac{2}{300}$	1.67	250	0
Total		$35.00		

Total interest paid is $35.

(b)

Date	Calculation of Interest	Payments: Interest	Payments: Principal	Balance Owing
June 15				$400
June 30	$400 \times \frac{3}{400}$	$3.00	$40	360
July 31	$360 \times \frac{3}{400}$	2.70	40	320
Aug. 31	$320 \times \frac{3}{400}$	2.40	40	280
Sept. 30	$280 \times \frac{3}{400}$	2.10	40	240
Oct. 31	$240 \times \frac{3}{400}$	1.80	40	200
Nov. 30	$200 \times \frac{3}{400}$	1.50	40	160
Dec. 31	$160 \times \frac{3}{400}$	1.20	40	120
Jan. 31	$120 \times \frac{3}{400}$	0.90	40	80
Feb. 28	$80 \times \frac{3}{400}$	0.60	40	40
Mar. 31	$40 \times \frac{3}{400}$	0.30	40	-
Total		$16.50		

Total interest paid is $16.50.

5. (a) $39 (b) 9.6%

6. (a) $18 (d) $41
    (b) $90 (c) $55.75 (e) $45.50

7. (a) 26.3% (d) 21.4%
    (b) 14.8% (c) 21.2% (e) 16.9%

8. 19.3%

EXERCISE 28.1, PAGE 399

6. (a) $1.67 (c) $6.25 (e) 83¢
   (b) $2.48 (d) $2.21 (f) $5.09

7. (a) $6.13 (c) $24.90 (e) $50.82
   (b) $6.38 (d) $8.63 (f) $9.56

8. (a) $102.25 (c) $521.25
   (b) $359.33 (d) $1242.50

9. (a)

Date	Deposit	Withdrawal	Balance
Apr. 30	$	$	$375.00
May 4		21.50	353.50
May 7	10.00		363.50
May 14	10.00		373.50
May 15		5.80	367.70
May 21	10.00		377.70
May 25		3.25	374.45
May 28	10.00		384.45

   (b) $1.33, $0.45

10.

Month	Min. Bal.	Interest
Nov.	$250	$1.88
Dec.	250	1.88
Jan.	350	2.63
Feb.	550	4.13
Mar.	550	4.13
Apr.	700	5.25
		$19.90

   (c) $719.90

11. $2577.80

EXERCISE 28.2, PAGE 405

6. (a) $535 (d) $3401.22
   (b) $864 (e) $1114.82
   (c) $1155.63

7. The trust certificate by $2.74.

8. $597.50

9. Quarterly dividend of $40, 6.4%

EXERCISE 29.1, PAGE 411

7. (a) $7020 per year
   (b) $8640 per year
   (c) $800 per month
   (d) $278.85 per week
   (e) $150 per week
   (f) $832 per month

8. 60¢/h pays 12¢ more.

9. $48.75

10. (a) $178.35 (b) $143.20

11. $8750

12. $1760

13. $141.75
    118.75
    156.75
    171.20
    175.00

14. $312.30
    256.60
    238.70
    238.70
    199.00

15. Hourly rate job pays $1070 more in 1 year.

EXERCISE 29.2, PAGE 418

6. (a) $8.55 (c) $5.45
   (b) $13.85 (d) $3.55

7. (a) $12.30 (c) $17.47
   (b) $18.71

9. (a) $116.88, $99.63
   (b) $147, $120.54

10. Dinah takes home $96.60 which is $14.94 more than Paisley.

EXERCISE 30.1, PAGE 424

1. (a) Cumulative Earnings Record

Name Isobel Ringing Employee No. 1483
Address 2394 Gilded Cres. Exemptions $4578
Department Shipping Rate $3.75/h

Date	Total Hours	Reg. Pay	O T Pay	Gross Pay	UIC*	CPP*	Taxable Pay	Income Tax*	Union dues*	Total Ded'ns	Net Pay
Mar. 7	40	$150	-	$150.00	$2.10	$2.46	$145.44	$7.45	-	$12.01	$137.99
Mar. 14	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Mar. 21	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Mar. 28	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Apr. 4	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Apr. 11	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Apr. 18	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Apr. 25	40	150	-	150.00	2.10	2.46	145.44	7.45	-	12.01	137.99
Totals	320	1200	-	1200.00	16.80	19.68	1163.52	59.60	-	96.08	1103.92

* Deductions

(b) Cumulative Earnings Record

Name John Delaware Employee No. 32015
Address 1640 Bronze Ct. Exemptions $3874
Department Receiving Rate $4.80/h

Date	Total Hours	Reg. Pay	O T Pay	Gross Pay	UIC*	CPP*	Taxable Pay	Income Tax*	Union Dues*	Total Ded'ns	Net Pay
Feb. 2	45	$192	$36.00	$228.00	$2.59	$3.82	$221.59	$33.20	-	$39.61	$188.39
Feb. 9	42	192	14.40	206.40	2.59	3.47	200.34	27.20	-	33.26	173.14
Feb. 16	48	192	57.60	249.60	2.59	4.27	242.74	39.35	-	46.21	203.39
Feb. 23	46	192	43.20	235.20	2.59	4.00	228.61	34.70	-	41.29	193.91
Totals	181	768	151.20	919.20	10.36	15.56	893.28	134.45	-	160.37	758.83

* Deductions

2. (a) $154.57 (b) $183 (c) $63.46

3. Cumulative Earnings Record

Name Olive Pitt Employee No. 10234
Address 25 Dill Pkwy. Exemptions $1878
Department Tasting Rate $3.20/h

Date	Total Hours	Reg. Pay	O T Pay	Gross Pay	UIC*	CPP*	Taxable Pay	Income Tax*	Union Dues*	Others*	Total Ded'ns	Net Pay
Jan. 6	52	$128	$57.60	$185.60	$2.59	$3.10	$179.91	$31.05	$1	$21.75	$59.49	$126.11
Jan. 13	48	128	38.40	166.40	2.33	2.75	161.32	26.10	1	21.75	53.93	112.47
Jan. 20	42	128	9.60	137.60	1.92	2.23	133.45	18.25	1	21.75	45.15	92.45
Jan. 27	45	128	24.00	152.00	2.13	2.49	147.38	22.10	1	21.75	49.47	102.53
Totals	187	512	129.60	641.60	8.97	10.57	622.06	97.50	4	87.00	208.04	433.56

* Deductions

4. Cumulative Earnings Record

Name Mike Moulder — Employee No. 1327
Address 32 Whitewall Ave — Exemptions $4226
Department Building — Rate $125/week
$0.052/tire

Date	Reg. Pay	Total Tires	Incent. Pay	Gross Pay	UIC*	CPP*	Taxable Pay	Income Tax*	Union Dues*	Other Ded'ns*	Total Ded'ns	Net Pay
Mar. 2	$125	250	$13.00	$138.00	1.93	2.24	$133.83	$5.80	$1.25	$3.50	$14.72	$123.28
Mar. 9	125	350	18.20	143.20	2.01	2.34	138.85	7.40	1.25	3.50	16.50	126.70
Mar. 16	125	320	16.64	141.64	1.99	2.31	137.34	6.85	1.25	3.50	15.90	125.74
Mar. 23	125	400	20.80	145.80	2.04	2.38	141.38	7.90	1.25	3.50	17.07	128.73
Mar. 30	125	280	14.56	139.56	1.95	2.27	135.34	6.35	1.25	3.50	15.32	124.24
Totals	625	1600	83.20	708.20	9.92	11.54	686.74	34.30	6.25	17.50	79.51	628.69

* Deductions

EXERCISE 30.2, PAGE 427

4. (a)

Employee Number	Hours Reg.	Hours O T	Rate	Gross Pay	UIC*	CPP*	Taxable Pay	Income Tax*	Union Dues*	Total Ded'ns	Net Pay
30243	40	5	$2.60	$123.50	$1.73	$1.98	$119.79	$14.40	-	$18.11	$105.39
30247	40	6	3.00	147.00	2.06	2.40	142.54	21.00	-	25.46	121.54
30248	40	3	2.70	120.15	1.68	1.92	116.55	13.85	-	17.45	102.70
30249	40	0	3.50	140.00	1.96	2.28	135.76	18.80	-	23.04	116.96
30252	40	0	3.10	124.00	1.74	1.99	120.27	14.95	-	18.68	105.32
30255	40	4	2.60	119.60	1.67	1.91	116.02	13.85	-	17.43	102.17
30256	40	6	2.70	132.30	1.85	2.14	128.31	17.15	-	21.14	111.16
Total	280	24		906.55	12.69	14.62	879.24	114.00		141.31	765.24

(b) $18.78/table

(c) UIC: $30.46
CPP: $29.24
Income tax: $114

5. (a)

Sales Rep	Sales	% Commission	Gross Earnings	Personal Exemption	Deductions CPP	Deductions UIC	Deductions Inc. Tax	Total Ded'ns	Net Earnings
J.R. Sel	$2500	5 %	$125.00	$3874	$2.01	$1.75	$ 4.95	$ 8.71	$116.29
R.E. Good	2000	5.5%	110.00	3874	1.74	1.54	1.50	4.78	105.22
O.J. Day	2350	6 %	141.00	4578	2.30	1.98	5.35	9.63	131.37
R. Budicky	3500	4 %	140.00	3522	2.28	1.96	9.70	13.94	126.06
L. Wong	3200	4.5%	144.00	4226	2.35	2.02	7.40	11.77	132.23
A. James	2650	4 %	106.00	3522	1.67	1.49	1.55	4.71	101.29
S. St. Jean	2160	5 %	108.00	1878	1.70	1.51	10.65	13.86	94.14
R. Proulx	3240	4.5%	145.80	1878	2.38	2.04	20.45	24.87	120.93

(b) 4.8%

6.

Name	Net Earnings	Numbers of each Denomination $20	$10	$5	$2	$1	0.25	0.10	0.05
L.B. Blue	$168.60	8		1	1	1	2	1	
H. Dumpty	135.20	6	1	1				2	
R.R. Hood	152.80	7	1		1		3		1
Ms. Muffet	115.25	5	1	1			1		
B. Peep	128.10	6		1	1	1		1	
R. Stiltskin	140.45	7					1	2	
T. Tinker	108.75	5		1	1	1	3		
Total	949.15	44	3	5	4	3	10	6	1
		×20	×10	×5	×2	×1	×0.25	×0.10	×0.05
Check	949.15	880.	30.	25.	8.	3.	2.50	0.60	0.05

7.

Department	Job Description	Weekly Rate	Total Cost	Dept. Totals
Office Staff	1 office manager	$220	$ 220	
	1 accountant	180	180	
	1 cashier	130	130	$ 530
Sales	2 reps	300	600	
	3 reps	250	750	
	2 reps	200	400	1750
Service Dept.	2 clerks	120	240	
	3 apprentice mechanics	130	390	
	5 mechanics	225	1125	
	1 service manager	350	350	2105
				4385

MBS EXERCISE 6, PAGE 430

1. (a) $120.17/month $6.87/100 km
   (b) $ 90.50/month $7.24/100 km
   (c) $219.67/month $8.79/100 km
   (d) $ 58.58/month $7.03/100 km
2. (a) $79.71 (b) $126.91 (c) $338.96
3. (a) $359.10 (b) $345.60 (c) $129.60
4. (a) 19.25% (b) 64% (c) 39.44%
5. Mower $5/week
   Sofa $40 down
   Car $1780
   Radio 16 weeks
6. 27.6%
7. (a) $346.69 (b) $866 (c) $629.86
8. (a) $1216 (b) $1023.75
9. (a) $10.35 (b) $16.85

8. Cumulative Earnings Record

Name I.N. Voyce Exemptions $4226
Department Warehouse Hourly Rate $2.85

Date	Total Hours	Reg. Pay	O T Pay	Gross Pay	Deductions UIC	Deductions CPP	Inc. Tax	Deductions Total	Net Pay
Feb. 6	42	$114.00	$ 8.55	$122.55	$1.71	$1.96	$2.35	$6.02	$116.53
Feb. 13	45	114.00	21.38	135.38	1.89	2.19	5.30	9.38	126.00
Feb. 20	46	114.00	25.65	139.65	1.95	2.27	6.35	10.57	129.08
Feb. 27	40	114.00	-	114.00	1.60	1.81	1.00	4.41	109.59
Total	173	456.00	55.58	511.58	7.15	8.23	15.00	30.38	481.20

REVIEW EXERCISE, PAGE 461

2. (a) 62 N at 13° to 40 N force
   (b) 42 N at 23° to 29 N force
   (c) 107 N at 41° to 120 N force
3. 27 km/h bearing 111°
4. (a) 12.2 km (b) 328° (c) 148°
5. 132 N at 56° to 60 N force
6. 67 km, 313°
7. 8.5 N at 69° to 3 N force
8. P = 5.3 N, Q = 6.5 N
9. $65.63
10. 90 days

11. $2385.03

12. 8.5%

13. $529

14. $127.33

15. (a) $264.60
    (b) $278.53
    (c) $281.32

16. Wunder, $7.13

17. 18.4%

18. $74.88

19. $492.55

20. $7.06

Date	Owing
July 14	$600
July 31	400
Aug. 31	250
Sept. 20	100
Sept. 30	0

21. (a) $76.92 (b) 28.4%

22. (a)

Date	Interest Calculation	Payments: Interest	Payments: Principal	Balance Owing
Apr. 1				$1000
Apr. 30	$1000 \times \frac{1}{100}$	$10.00	$125	875
May 31	$875 \times \frac{1}{100}$	8.75	125	750
June 30	$750 \times \frac{1}{100}$	7.50	125	625
July 31	$625 \times \frac{1}{100}$	6.25	125	500
Aug. 31	$500 \times \frac{1}{100}$	5.00	125	375
Sept. 30	$375 \times \frac{1}{100}$	3.75	125	250
Oct. 31	$250 \times \frac{1}{100}$	2.50	125	125
Nov. 30	$125 \times \frac{1}{100}$	1.25	125	0

Total interest paid is $45.
(b) 10.2%

23. (a) $194.08 (b) $3.70/100 km

24. $315.63

25. (a) $87 (b) $65.25 (c) None

26. $1230

27. $15 184.93

28. $92.50

29. $1687.31

30. $585/month is $1/week better

31. (a) $77.26 (b) $127.16 (c) $98.26

32.

Employee	Hours			Gross			Taxable	Income	Union	Total	Net
	Reg.	O T	Rate	Pay	UIC*	CPP*	Pay	Tax*	Dues*	Ded'ns	Pay
J.D. Taylor	40	2	$3.10	$133.30	$1.87	$2.16	$129.27	$17.15	-	$21.18	$112.12
W.F. Morton	40	5	2.70	128.25	1.80	2.07	124.38	16.05	-	19.92	108.33
W.C. Guyatt	40	8	2.60	135.20	1.89	2.19	131.12	17.70	-	21.78	113.42
E.C. Jones	40	4	3.20	147.20	2.06	2.41	142.73	21.00	-	25.47	121.73
N.E. Orr	40	1	3.50	145.25	2.03	2.37	140.85	20.45	-	24.85	120.40
Totals	200	20		689.20	9.65	11.20	668.35	92.35	-	113.20	576.00

* Deductions

DATE DUE SLIP

DUE EDUC FEB 26 '84

FEB 26 RETURN

DUE EDUC

MAR 26 RETURN

DUE EDUC APR 10 '85

APR 10 RETURN

DUE EDUC FEB 07 '87

FEB 07 RETURN

DUE EDUC MAR 23 '87

MAR 19 RETURN

NOV 29 '87

NOV 28 RETURN

DUE EDUC MAR 14 '88

DUE EDUC NOV 22 '88

DUE EDUC MAR 29 '88

DUE EDUC APR 05 '88

DUE EDUC APR 12 '88

APR 12 RETURN

DUE EDUC MAY 18 '88

MAY 18 RETURN

DUE EDUC NOV 01 '88

OCT 27 RETURN

DUE EDUC MAR 14 '89

MAR 09 RETURN

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